SOAP and SANITARY CHEMICALS

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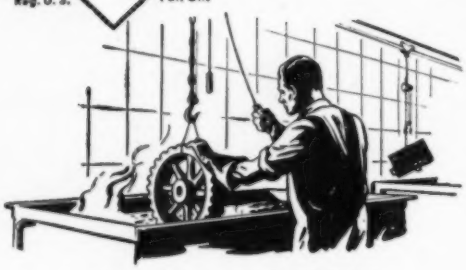

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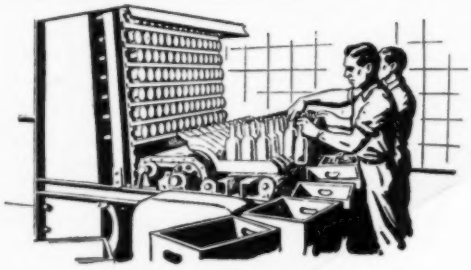

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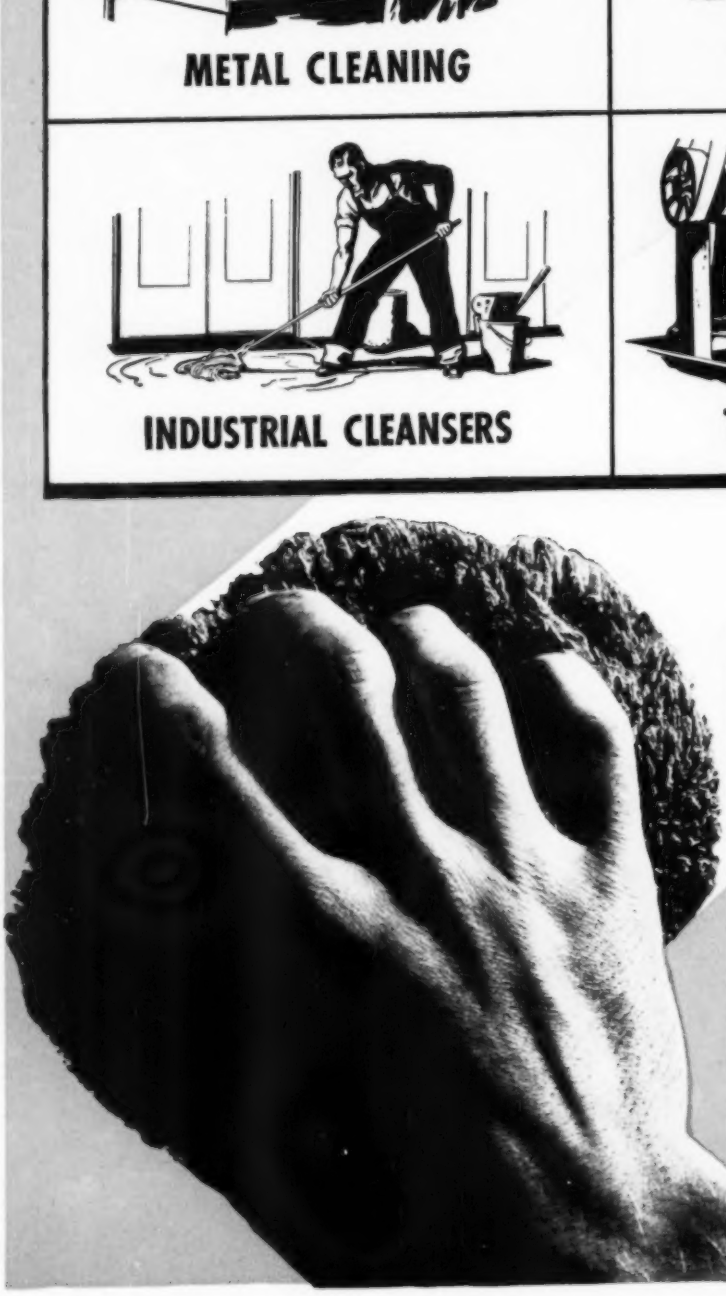

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AS THE EDITOR SEES IT

SOAPERS generally, and the larger soapers in particular, reflect the gloom which pervades the industry. For the fourth quarter of 1946, predictions have been made that soap production may drop to less than fifty per cent of the so-called normal for the quota base period of 1940-41. The fats and oils simply are not available to produce enough soap. Some are frank to admit that present ceiling prices for laundry soap products do not arouse their enthusiasm. The feeling that the soap shortage will become worse before it improves seems to be general.

The large number of new non-soap detergents which have come to market of late, encouraged by the soap shortage, is not pleasing to old-line soapers. They see an opportunity presented to these newcomers which threatens the future of soap products behind which stand many years and millions of dollars in merchandising and advertising investment. Some feel that the present is the beginning of a new era, long predicted, marking the rise of non-soap organic detergents in which competition will compel the larger soapers to participate on a broad scale. But, be that as it may, the soap shortage grows worse. If there were a vote in the industry to place the blame, OPA would win in a walk.

A GROUP of potash soap manufacturers, acting independently, has petitioned OPA to decontrol potash soaps. The basis of this petition is that potash soaps as such represent but a small portion of the soap industry, that only a small amount of them find their way into the household consumer market, and that they are not cost-of-living items in the general sense of the term. Because of the diversity of their chief applications in industry and in institutional maintenance, it is held that they should be divorced from the general soap classifications.

Inasmuch as most potash soaps are manufactured by small companies and in small quantities, costs per unit of manufacture have risen more sharply and are disproportionate to the general scale of soap manufacturing costs. There has been a renewal of long-absent competition in the potash soap field owing to a decline in demand, and supplies are now adequate to supply the demand and to preclude any undue price adances, potash soaps differing in this respect at this time from all other soap products. On a basis of these arguments which are all in accordance with the facts as we know them, decontrol would seem to be a sensible step.

HAVING viewed the workings of WFO-42b thus far in 1946, during which period we have seen the oil and fat situation go from bad to worse and have also seen the gradual development of the worst soap shortage in the recent history of the country, we too have begun to wonder just what useful purpose, if any, this war food order now serves. Since its inception, we had been of the opinion that the lot of the small firm would be hopeless without it. We had always viewed it as an umbrella for the small soaper, without which his supply of oils and fats would be less than woefully inadequate. But everything which we feared would happen if WFO-42b were repealed has just about happened anyway. We are in a hell of a mess with it. Would we be any worse off without it?

If WFO-42b were off the books, a temporary mad scramble might ensue. Some firms might be irreparably injured. But, with restrictions removed, there is a remote possibility that conditions might shortly improve, even though it is difficult to imagine how. As things now stand, the experts, — unduly pessimistic, we feel, — promise no material improvement in the oil, fat, and soap situations for another two years,—may-

be longer. With the wraps off, some of our more ingenious soapers might find ways to pick a few oil and fat rabbits out of a hat. And then again, they might not. To a nation of poker players and crap shooters, like ourselves, termination of WFO-42b might be an even money gamble,—and would entail at least one less government regulation under which the industry would have to labor.

Like the old maid who peered hopefully beneath her bed each night before retiring, the wishes of most soapers are reaching the desperate stage. They do not know that washing out WFO-42b is the answer to their desperation, but in the hopes that it might be, many are willing to take a chance just to see what happens.

WHEN the group of small soapers who held a meeting in Chicago last month announced that the Department of Agriculture intended to adopt all the recommendations of the Small Business Committee for amending WFO-42b, they evidently misunderstood the intentions of the Department, as far as we can determine. They had previously been assured that the recommendations from the congressional committee would be "respected." But this did not necessarily mean full adoption. By "respected," it was apparently meant that the recommendations would be considered, and such as were deemed advisable might be adopted. Quite obviously, some of the recommendations are impracticable, and there is no certainty that any of them would do more than transfer injustices from one part of the industry to another. As we see it, WFO-42b had best be left as it is at this time; or wiped out completely, preferably the latter. As for the Chicago group, their enthusiasm for change probably misled them.

NEWSPAPER clippings show that housewives here and there about the country are writing to the papers to suggest that scarce laundry soap should be made available to those women who turn in their waste kitchen fats. At least, the general trend of these communications goes, those housewives who turn in fat should receive more consideration in the way of soap chips and the like than those who do not bother. Those who turn in fats should receive a "soap ticket" which would guarantee the holder at least a priority on a box of chips or granules or other laundry soap, it is suggested.

Surely, the Fat Salvage Committee has had this same thought in mind. But even a brief consideration of the machinery needed to operate such a plan brings up a discouraging number of obstacles. We cannot conceive of retailers arousing any enthusiasm for the idea. They would still serve first those whom they want to serve first, just as they do now, and the holders of "soap tickets" could be damned. Justice and fairness may be on the side of preference for fat savers, but practical workability is quite obviously against it.

BACK we go again to the recommendations of the Small Business Committee of the House of Representatives regarding WFO-42b! After having discussed the matter of the proposed 60,000 pound per quarter bonus of oils and fats for all soapers as included in those recommendations, we find that this provision is quite widely misunderstood. The idea is prevalent that each and every soaper would receive a flat "bonus" of 60,000 pounds of fat per quater irrespective of his quarterly quota figure. This is not the case.

Each soaper would receive *up to* 60,000 pounds per quarter, but no more fat or oil than would bring his total for any quarter up to 100 per cent of his 1940-41 use. For example, a soap maker whose quarterly base figure is 100,000 pounds and who is now operating at the rate of 78,000 pounds, could take advantage only of 22,000 pounds of this 60,000 pound "bonus." He could not increase his fat use to 138,000 pounds per quarter as many seem to believe. So, if,—and it's a big "if,"—USDA ever adopts this recommendation, this is the way it would work out. We have a feeling, incidentally, that the USDA would not be too reluctant to abandon WFO 42b completely if it had such a request from the soap industry.

USDA MOVES TO INVESTIGATE SALES OF SOAP TO Soap Converters

HOW long must fat and oil quotas for soap makers continue? What are the intentions of the Department of Agriculture with regard to the recommendations of the House Small Business Committee for revision of WFO 42-b? How much fat and oil has gone during the war years, and how much is still going into quota-exempt soaps? Why is it necessary more than a year after the war has ended to continue exemptions from quota restrictions? Why are soap converters exempted in WFO 42-b from filing the report forms (M 17 D) with the Bureau of the Census which soap manufacturers are required to file? What action has the compliance division of the Department of Agriculture taken to check on the authenticity of quota-exempt sale of soaps to converters?

These are some of the questions with which soap makers currently seem to be rather concerned. By and large, they accepted quota restrictions and the various exemptions during the war years without asking too many questions or raising too many squawks. Now that the war has been over for more than a year, they are beginning to wonder how long the restrictions and the exemptions for a few are to continue. They are wondering whether there have been "leaks" of fats and oils which the government agencies have failed to check, and they seem to be particularly concerned with some phases of the "soap converter" question.

One soap maker interviewed recently by a representative of *Soap and Sanitary Chemicals* was quite frank in admitting that approximately two-thirds of the current output of his plant is represented by sales of quota-exempt soap to "converters," the accepted definition of a "converter" being anyone who is willing to sign a certificate testifying that he is entitled to buy on a quota-exempt basis. He observed that he is not charged with the responsibility for policing soap buyers, but hazarded the opinion that a check by compliance officials would very probably disclose widespread violations. The violations, it should be pointed out, are violations by the soap buyer and not normally by the seller. The responsibility of the soap maker seems to be non-existent unless "he has reasonable cause to believe (the exemption certificate) to be false."

The status of sales of "exempt soap" to converters has recently been the subject of a bulletin issued by the Association of American Soap and Glycerine Producers as follows:

"Soapmakers are aware that converters of soap are subject to the quota and other restrictions of WFO-42b. This regulation limits converters in the quantity of fats and oils in the form of soap which they are permitted to convert by the addition of other materials. Converters, like soap manufacturers, are limited to 78 per cent of their base period use of fats and oils for package and bar soap for civilian detergent use, and to 84 per cent of their base period use for bulk package soap for civilian detergent use.

"It appears that some soapmakers, in billing converters for soap sold to them, permit the words 'exempt soap' (or other words to similar effect) to appear on their invoices to such converters. While the appearance of such words on invoices does not exempt converters from the regulation, the use of these words in this way may nevertheless confuse some converters. It is therefore a practice which should be discontinued.

"Obviously the words 'exempt soap' when they appear on an invoice to a converter, mean a different thing to the producer of the soap than they do to the converter. If the soap producer wants this kind of record upon his own copy of the invoice, his bill clerk should place it there, but should not let the same words appear upon the original invoice sent to the converter (or upon any copies thereof which may go to the converter).

"Kindly see that this is explained to your invoice clerks. The cooperation of all soapmakers in this matter will be most helpful to the soap industry, the enforcement officials at Washington, and to the converters themselves."

There have quite probably been numerous deliberate violations of the quota-exemptions by soap buyers who choose to misunderstand the text of WFO 42-b, and are willing to sign most any routine certificate to get needed supplies of soaps. Other violations may very well have come from those either totally unfamiliar with the existence of such an order, or unable to read it intelligently. The significant clauses of WFO 42-b governing exemptions on converter sales follow.

Under the section of the order dealing with Quota Exemptions (c) it is provided that "Nothing in (b) (1) hereof" (the section of the order imposing quota controls) "shall restrict the following uses of fats and oils: . . . use in soap sold or contracted for sale to soap converters for further processing."

"Soap converter" is defined as follows:

(3) "Soap converter" means any person who uses soap made by others as a raw material and, by the addition of other materials or ingredients, makes a finished product which is sold for detergent purposes. The term "soap converter" shall not include persons who merely add small amounts of color or perfume to the original soap, or who merely dissolve paste or other soaps in water to make liquid soaps.

To keep track of all such exempt sales, and aid in checking on them, the USDA requires that an end-use certificate be signed by the soap buyer. A copy of the certificate must be retained by the person claiming exemption, in this case the soap manufacturer. It is further specified that "all statements contained in such certificates shall be deemed representations to an agency of the United States. No person shall be entitled to rely upon any such certificate if he knows or has reasonable cause to believe it to be false."

Casual signers of these end-use certificates have quite obviously exposed themselves to the danger of heavy penalties. Aroused by the increasing number of sales to buyers claiming to be entitled to the "converter" exemption, the compliance division of the U. S. Department of Agriculture began a series of investigations several months ago which, it is reported, have disclosed a number of serious violations. A West Coast firm has been found guilty within the past few weeks, of illegal use of some 666,000 lbs. of fats and oils, and a fine of $9,000 has been levied.

It is reported that other violations have been uncovered and will be announced shortly. Widespread publicity for the penal action taken against these violators may limit sharply the future willingness of other phony "soap converters" to sign end-use certificates with a free hand. At the same time it is recognized that the vast majority of converter sales have been to firms rightfully entitled to the exemption privilege.

A NUMBER of soap makers and users have advanced the idea that the USDA could readily control violations of the converter exemption privilege if it would simply make public the names of the soap companies doing such business and the amounts of such sales, together with the names of the buyers who claim exemption as converters and the amount of their exempt purchases. This the USDA refuses to do, with the very logical explanation that such information is confidential, and that it has no right to release what would in effect be a list of purchasing prospects for other soap makers who might, either now or after the fat shortage is over, decide to go out after a share of this soap converter business. There does not seem to be any valid reason, however, why the USDA should refuse at least to let the trade have some idea of what amounts of fats and oils are involved in exempt sales of soaps to converters. They have refused a direct request from *Soap and Sanitary Chemicals* for these figures, the release of which would seem to be the only way for anyone in the industry to gauge whether or not the soap converter leak is or has been a serious one, or merely an unimportant trickle.

AS ANOTHER move to tighten up on possible abuse of the soap converter privilege, it has been suggested to USDA officials that there is no particular reason why converters should be exempted from filing with the department the same records and reports which soap manufacturers are required to submit on their fat and oil usage. Every soap manufacturer is required to file with the Bureau of the Census each quarter a copy of Form M 17 D, if he uses more than 15,000 lbs. of fats and oils. This form records the quantity of fats and oils used, the type of oil used, etc.

For some unapparent reason soap converters are exempt from filing these forms. Many soap makers are currently asking, "Why?", just as they asked a few months back why users of fats and oils in the manufacture of synthetic detergents were exempt from quota controls, while soap makers were limited to 78 or 84 per cent of base period use. The answer given to *Soap and Sanitary Chemicals* recently by a representative of the Department of Agriculture is that it might be very well for the next amendment to WFO 42b to incorporate a provision requiring soap converters to file the same reports that soap makers are required to file. As a matter of fact the department is now requiring such reports from all new converter accounts. Just why converters were originally exempted from filing M 17 D forms has not been explained; but the department has now rectified this omission. In the face of the growing soap shortage they seem intent on taking every precaution to cut off possible leaks of oils and fats through abuse of the exemption privilege.

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Tall-oil soap is emulsified by heating with steam and agitating with sodium chloride solution, the concentration being 12-13 per cent when color is not a consideration, and about 8 per cent when color is of major importance. Usually five washes will remove the greatest part of the oxidized and charred material from the stock. Elimination of objectionable alcohols and recovery of acids are achieved by forming an aqueous emulsion at 190°F. and adding hydrochloric or acetic acid until the aqueous layer is just acid to litmus. Agitation is continued an hour after the emulsion has broken. The pure acids are dehydrated and are then suitable for esterification, hydrogenation, etc. B. M. Weston and F. F. Beall, to Aristo Corp. U. S. Patent No. 2,399,588.

OIL AND FAT OUTLOOK

By Charles E. Lund*

Chief, Foodstuffs Division, Dept. of Commerce

IN an outlook report, it is usually desirable to consider the past as an indication of the future. This procedure is only partially valid in the case of these versatile fats and oils, which are adaptable for use in formerly untried fields. War always results in the development of new products to replace those affected by the disruption of world trade. The two world wars have had profound effects on the production and ultimate consumption of fats and oils in our foreign and domestic trade.

Current shortages of linseed oil are causing some diversion of soybean oil from the edible trades to the paint industry. To compensate for this movement, equivalent quantities of coconut oil, our traditional soap fat, have been allocated to the manufacture of edible products. At various times during the war period, when our surplus became burdensome, hundreds of millions of pounds of lard were diverted to the manufacture of soap.

During World War II a greatly expanded domestic production enabled us to ship annually one and one-half billion pounds of fats abroad to our allies. These exports, lard, linseed oil, and soybean oil, were shipped principally to the United Kingdom and Russia. This in contrast to the prewar period, when the United States was a net importer of one and one-half billion pounds of fats and oils. These receipts, principally industrial oils destined for the paint pot and the soap kettle, were cut in half during the war period. However, farms and factories performed production miracles and domestic consumption standards remained high.

Currently, United States supplies, in relation to consumption needs, are at exceedingly low levels. Domestic utilization of fats and oils in 1946 is expected to show a decline from last year's 9.8 billion pounds and may decrease by 800 million pounds from average usage during the three preceding war years. No improvement in this situation is anticipated as a result of domestic production during the current crop year. Estimates, based on crop conditions and probable slaughter, indicate that output of fats and oils from domestic materials in the 1946-47 season will amount to approximately 8.7 billion pounds, compared with the wartime record of 11.2 billion in 1944.

At this time there is little hope, at least until domestic crops come to market in 1947, for a balance of supply and demand in the edible field, those fats which provide our consumption of lard, shortening, butter, margarine, and edible oils. It is not expected that output of these food fats from domestic materials will exceed 6.4 billion pounds in the 1946-47 season. This compares with an estimated potential demand, if unrestricted, for seven billion pounds. Consumption at this level would provide 50 pounds per capita of finished products in the edible fats and oils field for our population of 142 million. Imported fats and oils may swell edible supplies somewhat, but traditionally receipts from foreign sources have moved principally into industrial channels.

With regard to industrial oils, indications are that shortages in the drying trades will continue in 1947, unless sizable receipts of Argentine linseed oil are imported into this country. Output of oil from domestic flaxseed may not exceed 400 million pounds, contrasted with average annual 1939-41 use of more than 650 million. The present building program and the needs for refinishing commercial buildings and private homes require paint oils at unprecedented levels. The drying oil trade estimates a need of 850 million pounds of linseed oil in the coming twelve months. This demand is likely to be only partially satisfied, unless the import situation improves markedly. Reflecting our need for a greater supply of linseed oil, the Department of Agriculture has urged a greatly expanded flaxseed acreage in 1947.

THE remarkable revival of the Philippine copra trade, with exports now equalling and surpassing the prewar rate, will alleviate the tight soap fat situation to some extent. With the high level of current copra shipments to the U. S. exceeding available crushing and storing facilities in this country, some shipments from the Phillipines are moving to Europe as part of the world allocation. In September practically all the Philippines total shipments of approximately 60 thousand long tons moved to countries other than the United States. Low domestic tallow and grease output is further handicapping soap manufacturers, and it is likely that laundry soap will continue to be found only infrequently on grocers' shelves.

Gaps between supplies from domestic materials and effective demand will be offset to some extent by an expected improvement in the import situation. These imports may total

* Address before the American Meat Institute, Chicago, Oct. 2, 1946.

one and a half billion pounds in 1947, or 75 per cent of the prewar figure, judging by some indications regarding commodities which in the past have supplied the most significant share of our imports.

In the five years, 1937-41, coconut oil and copra, linseed oil and flaxseed, castor oil and beans, and tung and palm oils (all on an oil basis) comprised approximately three-fourths of the two billion pound import total. In 1945, when imports amounted to less than one billion pounds, these commodities still accounted for nearly 60 per cent of the lowered total.

Among these major imported items, the outlook for 1947 receipts of Philippine copra is by far the most favorable. Presently it is estimated that the United States will receive some 400 million pounds (in terms of oil) in the calendar year 1946, compared with the 1945 figure of 183 million, and average prewar imports of 700 million pounds. Prospects for 1947 are even more favorable. If Philippine exports could be maintained at present levels, United States imports of copra (in terms of oil) from that source might reach 700 million pounds in 1947. Such a total is dependent, however, upon this country receiving a normal 80 per cent of all Philippine shipments, and their continuance at current high levels.

There is hope for improved receipts of castor beans and oil in 1947. The recent price increase of 40 per cent for Brazilian castor beans is expected to stimulate shipments. Present indications are that approximately 160 million pounds (in terms of oil) will arrive in this country during 1947. The protective coating industry has been the principal user of this replacement for Chinese tung oil.

Traditionally Argentina has been among the more significant sources of our fats and oils imports. Receipts from that country comprised 11 per cent of incoming shipments in 1940, and increased relatively and absolutely during the war years, providing more than one-fourth of all imports in 1945. The vegetable oils currently available from Argentina's exportable surplus are reported at 200 thousand long tons, including 120 thousand tons of linseed oil. About 32,000 tons of this linseed oil are allocated to the United States with some scheduled for arrival in October. The oil on the basis of the Buenos Aires price, will cost about 27 cents a pound landed at New York, compared with an 18 cents OPA ceiling at that point. The method of adjusting these prices has not as yet been announced.

THE over-all situation of fats and oils in this country requires the limitation of exports in 1947 to commercial shipments for traditional markets, with minor quantities going to the various missions throughout the world in which the United States has interests, such as the rubber and petroleum developments. Small amounts of United States domestic oils will also be exchanged for foreign oils essential to our economy, but this may mean no net decrease in our supplies. It has been officially announced that export commitments comparable to the 384 thousand long tons so ear-marked in 1946, are not contemplated in 1947.

If this position is maintained, and shipments are confined principally to commercial exports, it appears that total exports next year should comprise less than one-half the 1946 figure, or close to the 1940 level of 373 million pounds.

Considering these potential changes in our production and foreign trade it appears that, while this country could consume 10.7 billion pounds of fats and oils, on a pre-war per capita basis, net supplies this season will be a billion pounds short of unrestricted demand. These supplies for civilian consumption are lower than during the actual war period. With stocks abnormally low, there is the further problem of refilling our supply pipelines. Factory and warehouse stocks are currently 500 million pounds below normal levels.

On the brighter side, it should be noted that there is probably no field so subject to quick and material changes in the supply situation. This is decidedly true in fat and oil production. Output of animal fats is regulated by a combination of the extent of livestock marketing, their weight, and the comparative market for the fat take-off at both packer and retail levels.

A ready demand since Pearl Harbor has absorbed every type of meat cut, whether fat or lean. This situation resulted in lowering the amount of fat ordinarily trimmed from meat and the marketing of fat cuts formerly tanked. With record supplies of corn and other feeds, and the current rate of livestock slaughter low, it appears that there is considerable feeding to heavier weights. This action will result in more animal fat becoming available if market conditions later this season permit a normal addition to our fat supply. Slaughter of these cattle and hogs, yielding more fat, should begin early in 1947. However, with inventories at a low level, it is likely to be several months before supplies of animal fat are sufficient to meet consumer needs. The soap industry is particularly affected by the low stocks of tallow and grease.

There is also hope that harvests of domestic oilseed crops in the late summer and early fall of 1947 will result in larger fats and oil supplies than those of the current season. Already a 60 per cent increase in 1947 flaxseed acreage has been requested. Also by late 1947, we are likely to see an easing in the world supply situation. This trend will not only result in a lessening in demand for United States fats and oils for shipment abroad, but will also allow us to import more normal quantities of those industrial fats and oils essential to our economy.

WHALE oil from the 1946-47 catch will be one welcome addition to European supplies. Twenty floating factories are expected to be operating in the Antarctic this winter, contrasted with 9 in 1945-46. It is estimated that some 600 million pounds of whale oil will move into Europe in 1947, compared with little better than 300 million last year. Although former imports were utilized by soapers in the United States, whale oil constitutes a leading margarine and shortening ingredient in Europe.

Diversion of acreage from oil

(*Turn to Page* 93)

POTASH SOAP DECONTROL

Group forming new Potash Soap Association asks separate decontrol by OPA - Potash soap sub-committee requested - Kranich, temporary chairman - Meet next month

PRICE decontrol for potash soaps, separate and apart from other soap products, has been requested by an independent group of potash soap manufacturers in a petition to the OPA, according to Herbert Kranich, president of the Kranich Soap Co., Brooklyn, acting as temporary chairman. The same group is in process of organizing a new Potash Soap Association, according to Mr. Kranich. Although the new association will be wholly independent in its activities, all members will be urged to retain their membership in the Association of American Soap & Glycerine Producers. This is in no sense a breaking away from the older association, Mr. Kranich pointed out, but the organization of a separate group to handle matters solely peculiar to the potash soap business. A meeting of the potash soap group will be held probably in the mid-west next month.

In his letter to OPA as interim chairman of the potash group, Mr. Kranich outlined the case for decontrol as follows:

1. *Potash Soaps Differ from Soda Soap in Many Important Ways*— Among the more important differences between potash and soda soaps are the following:

   Raw Materials Used — Potash Soaps are made from some soft oils, such as whole vegetable oils and primarily the fatty acids recovered from edible oil refining residue, and are saponified with caustic potash. Soda soaps, on the other hand, are made primarily from hard fats, such as animal tallow and grease, with or without the addition of the harder vegetable oils, such as coconut and palm, and are saponified with caustic soda.

   Manufacturing Processes — The manufacture of potash soaps is relatively simple compared with the manufacture of soda soaps. Potash soaps do not require the heavy capital outlay for plant and equipment required for soda soaps Saponification and finishing of potash soaps is much simpler than soda soaps, and glycerine, if present, does not have to be removed from potash soaps.

   Manufacturers — A very large number of small concerns make potash soaps, whereas a small number of large companies make a very large percentage of soda soaps. Roughly, there are from three to five times as many companies engaged in making potash soaps as there are soda soaps, and the potash soapmakers use only about one thirty-third of the total raw materials consumed in all soap manufacture. The potash soapmakers, therefore, are the "small businessmen" of the soap industry.

   Form of Product—Potash soaps are sold in the form of liquids, pastes, jellies and creams, whereas soda soaps are sold principally in the form of bars, cakes, flakes, chips, beads, granules and powders.

   Packaging—Potash soaps are packaged in drums, cans and bottles, whereas soda soaps are packaged in wrappers, cartons and barrels.

   Uses—Potash soaps are used primarily for industrial purposes, and commercial and public sanitation, whereas soda soaps are used mainly for personal hygiene and household sanitation. Potash soaps are used for personal hygiene to the extent they are used in dispensers in washrooms; they also are used for wire drawing, lubrication of textiles, hydraulic brake fluid, and U.S.P. Green Soap.

   Purchasers—Potash soaps are sold principally to railroads, schools, hospitals and other institutions, whereas soda soaps are sold mainly to the household consumer.

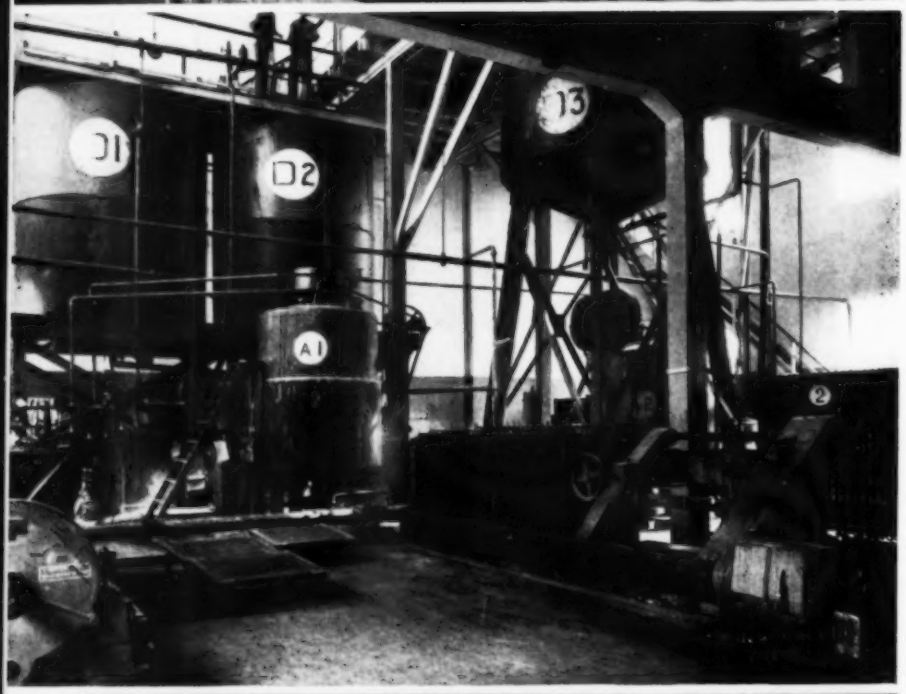
2. *Potash Soaps Are Not in Short Supply* — The supply of potash soap is sufficient to take care of current industrial and commercial needs. In fact, the supply has been sufficient to cause current quotations to tend to recede from ceilings, in spite of higher raw materials costs and quota restrictions on fats use.

3. *Decontrol of Potash Soaps Would Not Stimulate Diversion of Fats from Soda Soap Manufacture* — Since the supply of potash soaps is in reasonable balance with demand, there could be no incentive for any soda soap manufacturer to divert fats from soda soap to potash soap manufacture. Any such diversion, if tried, would be self-correcting. There is no pent-up, unsatisfied demand for potash soaps, and even an inconsequential diversion of fats from soda soap manufacture (since the ratio of fats consumption is 33 1/3 soda to 1 potash), would so flood the market for potash soaps as to cause immediate and decisive self-correction. Furthermore, the price structure for potash soaps is not attractive to soda soap manufacturers. Potash soaps are sold largely in bulk, at low price, to a limited number of customers, on a close profit margin with little or no expenditure for advertising and promotion. Potash soap is "supplied" and not "merchandised" as hard soaps are. There is, therefore, only limited opportunity for potash soap manufacturers to increase the total volume of consumption of their products, and that is confined largely to recovering business already lost to synthetic detergents and other wetting agents (soapless soaps) under the existing price structure. It just is not practical for potash soap prices to rise out of line with manufacturing and selling costs, with competition between 130 and 150 manufacturers in this field as keen as it is. Nor would decontrol of potash soaps make this field attractive to large soda soapmakers, who have other and presumably more profitable outlets for their quota fats. The only way theoretically the market for potash soaps could be increased would be through household use, which is not practical, particularly in view of the cost of educating consumers, the temporary nature of the market, and the availability of more attractive uses of fats in soda soaps.

4. *The Cost of Potash Soaps is Not Important in Living or Business Costs*—Potash soaps do not enter into the cost of living or the cost of doing business in any important way because—

   (a) They are not sold for household use; and

   (b) Their cost is almost infinitesimal in relation to the cost of operating the establishments in which they are used. For example ,the cost of the potash soap to maintain proper sanitary standards in an office building, railroad station, hospital, or school is negligible compared to the total cost of operating such an establishment.



SOAP M

THERE is almost no marketing of imported toilet soaps today in Brazil, according to Alan Porter Lee, consulting chemical engineer to the fats, oils, and soap industry, who spent some weeks in Brazil this past summer. Mr. Lee found the Brazilian soap industry small but well integrated to the production of all types of products that were common to this country in the years before the war. There was one exception, however. Almost no flake or bulk soap as we know it is produced by the Brazilian companies. The production of all types of soaps is now quite inadequate to meet a great rise in the demand for soap throughout South America. It seems, however, that the country must try to increase its own resources and productive facilities if the margin between supply and the unprecedented demand is to be narrowed. In general, there is a surplus of dollar exchange in the country and the cost of living is from three to five times that of pre-war days. At present, the housewife in Brazil, like her neighbor in the States, is plagued by an extreme shortage of laundry soap.

The largest selling toilet soap, "Gessy," is produced by Campanha Industrial, Gessy, Valinhos, which company also markets a soap of carbolic odor known as "Salus." Industrias Reunidas F. Materazzo, another Brazilian company with headquarters in Sao Paulo, put out a toilet soap known as "Feno". Two firms well known in the States have interests in Brazil. The Lever Brothers Brazilian company at Rio produce a brand known as "Lever" as well as their standard product, "Lifebuoy". Colgate-Palmolive-Peet Co. have a plant manufacturing "Palmolive." Two premium priced toilet soaps produced in Brazil are "Laven-

P MAKING in Brazil

der", made by Atkinson Co., Rio, and "Beija-Flor", produced by Beija Flor Co.

The normal soap oils are the ones used most widely in Brazil. The best tallow (high titer) comes from Argentina. The tallow furnished by domestic renderers and packers is of good quality. A number of small renderers furnish lower grade tallows and greases. Brazil has not used much coconut oil in the past and the principal oil of the lauric type is babassu. Other widely used oils are peanut, cottonseed, corn, castor, and sesame.

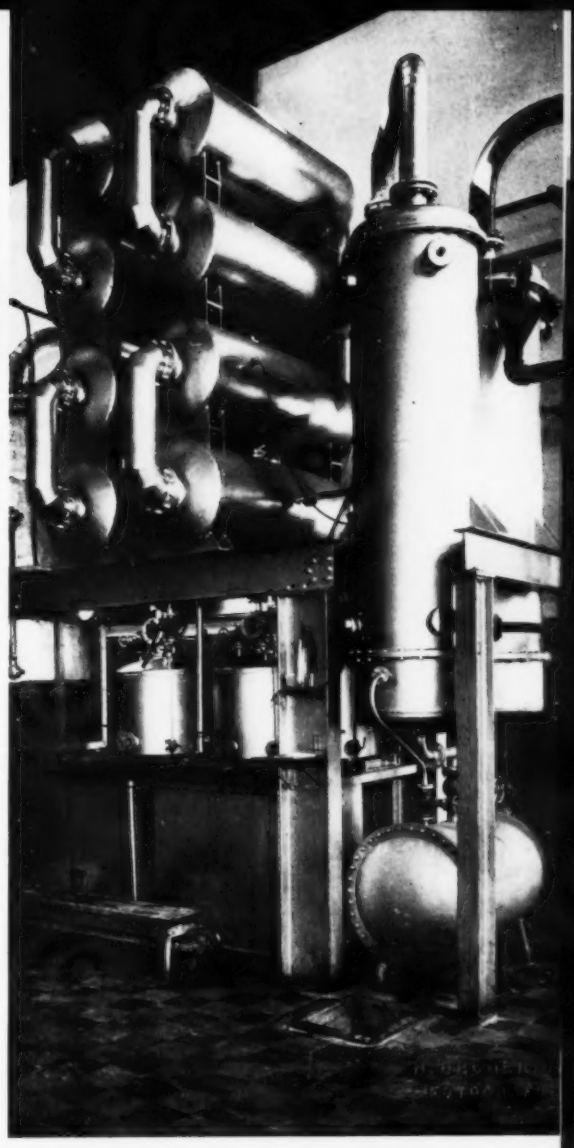
The bigger soap makers in Brazil express much of their own oil, using both the hydraulic press and the expeller. There is one solvent extraction plant running and one under construction. Babassu oil is extracted from press and expeller cake.

There are several hardening plants, but most of the products channel into edible uses. A large portion of the corn, sesame, and peanut oils also goes into edible products. One large company "Twitchells" all of its oils for laundry soap and neutralizes the fatty acids, thus formed with caustic soda and soda ash. The resultant soap is run into a crutcher and then into a press similar to a plate and frame filter press where it is cooled by running water through the jackets. The cool slabs are sent to the cutter and press.

In Brazil, they use standard silicate builders for their laundry soaps but no meta silicate or phosphate builders were observed. Toilet soap is heavily scented, the floral types being most widely preferred. The domestic producers have not been following the trend in the States of mildly scenting their laundry soaps except in a few cases where bars were mildly scented with caustic and citronella type perfumes.

Some potash soaps are made and find their use in shaving creams, shampoos, and as ingredients in toothpaste. There appears to be a market for potash soaps in the cleaner and sanitary product field.

Most of the soap-making equipment in the past years has come from Germany and England, although in recent pre-war years, some was furnished from the United States. There should be a very good market for such machinery in Brazil for the next several years.



Pictures: Top left, boiling batch of toilet soap base; center left, laundry soap cooled German fashion in press; bottom left, soap flows from crutcher through wooden trough to frames. Top right, German type glycerine still used in Brazil; bottom right, Jones modern automatic press working on toilet soap. Photos taken in a modern Brazilian soap plant.

soap consumption in

HARD WATER

By Don Raymore
Wisconsin Advertising Service

THE millions of dollars in soap wasted annually in American homes by hard water is a subject that warrants serious study. Sommer Chemical Testing Laboratories of Milwaukee has just completed some soap tests which may be of interest.

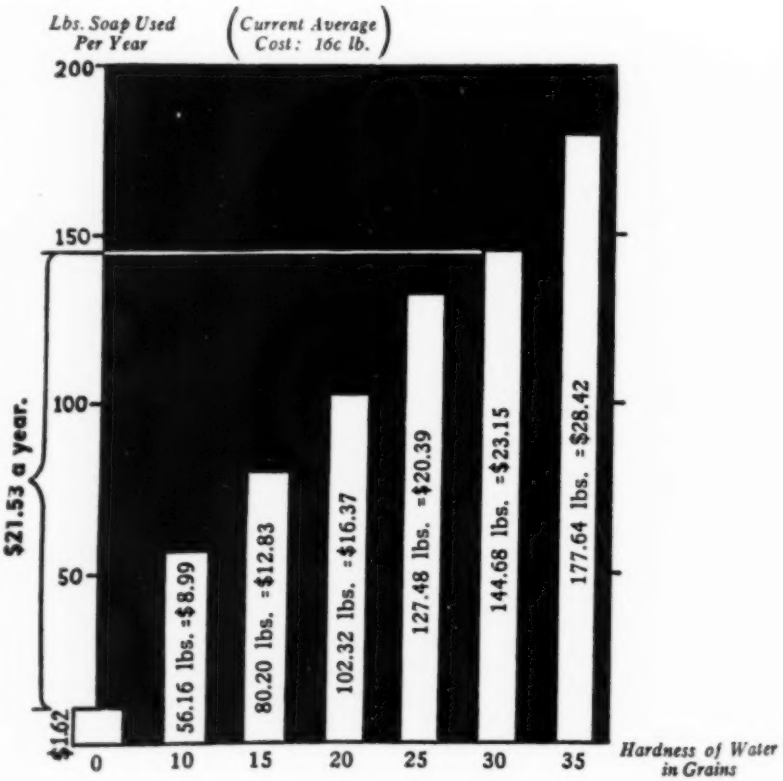
Some years ago Professor Foulk of Ohio State University had determined that the amount of soap required to reduce the hardness of 1,000 gallons of water one part per million is .2 of a pound and he proposed the formula 2 plus 0.2H as equivalent to the pounds of soap consumed per 1,000 gallons of water. The H in the formula is the total hardness of the water in parts per million. Other general formulas and tables have been published.

However, instead of accepting the general statement that the amount of soap required to raise a lather in water of a particular hardness is in direct proportion to grains of hardness of water, the Sommer Laboratories, at the request of the writer, undertook to test accurately, by actual measurement in various samples of water of varying grains hardness, the amount of soap really used in raising a lather.

The tests were made in the comparatively soft water range 0 to 10 grains hardness with two well-known soaps familiar to the average housewife. Measurements were taken at two different temperatures, 70 degrees and 150 degrees, of two types of soap, type A, a flake-product high in real soap

As to the method used by Sommer Laboratories in conducting the lather tests, quantities of water from Wauwatosa, Wisconsin, an adjacent suburb, were taken and tested, being found to contain a total hardness of 30 grains per gallon. Distilled water was then added to this in varying proportions. Distilled water was considered to be of zero hardness. The water mixes containing from 0 to 10 grains per gallon hardness were placed in jars. These jars were taken one at a time, and small gram measures of soap were added, a tiny bit at a time, the jar being shaken after each addition of soap, to see if a lather could be produced. If not, a little more soap was added, until a lather was produced when the jar was shaken. The amount of soap added to that particular sample of water was noted in fractions of grams. Then small amounts of additional soap were added until the lather could be considered permanent enough for actual washing purposes. The additional amount was also noted in grams.

Figure 2



content, and type B, a soap powder containing a considerable amount of non soap material and builders. A record was kept of the amount of soap required both for an initial lather and a permanent lather, since it was felt that the average housewife naturally would add enough soap to produce and retain a permanent lather.

In this way it was possible to observe the following:

(1) The effect of each additional grain hardness of the water.

(2) The reaction of two different types of soap.

(3) The effect of temperature.

(4) The proportion of soap required to hold a permanent lather, as compared with an initial lather.

It was found that the amount of soap required rose sharply in the first few grains hardness but started levelling off after that point and that each additional grain hardness above that point required less additional soap proportionately than each of the initial grains. Fig. 1 shows the results of permanent lather figures with "Type A," which was considered more typical of most soaps than "Type B."

At 70 degrees 5.39 times as much of "Type A" was required to raise an initial lather with water of 10 grains hardness as at zero grains hardness. A permanent lather was produced with 4.44 times as much soap at 10 grains as compared with zero grains.

Following is a summary of results of tests made with "Type A":

OUNCES SOAP PER 100 GALLONS WATER

Grains Hardness	*At 70° F.*		*At 150° F.*	
	Initial Lather	*Permanent Lather*	*Initial Lather*	*Permanent Lather*
0	5.6	7.00	2.96	4.16
1	7.58	8.04	4.16	4.72
2	13.26	14.00	8.01	8.29
3	18.84	19.58	8.89	9.17
4	24.44	25.64	10.05	10.65
5	26.80	27.48	12.87	13.93
6	27.35	27.80	19.26	20.45
7	28.01	29.49	23.70	24.27
8	28.92	29.77	24.70	25.22
9	29.49	30.30	25.22	25.80
10	30.30	31.14	26.70	27.58

"Type A" lathered more quickly at 150 degrees and less soap was consumed in each of the samples of water of varying grains hardness. A total of 9.02 times as much "Type A" was consumed at 10 grains hardness for an initial lather, 6.62 times as much for a permanent lather.

"Type B" was found to be more effective at 70 degrees than at 150 degrees, undoubtedly because it is a low titre soap. In all classifications it was more affected by hard water and used much more soap proportionately with each additional grain hardness in the water.

At 70 degrees with water of 10 grains hardness, 11.08 times as much soap was (*Turn to Page* 89)

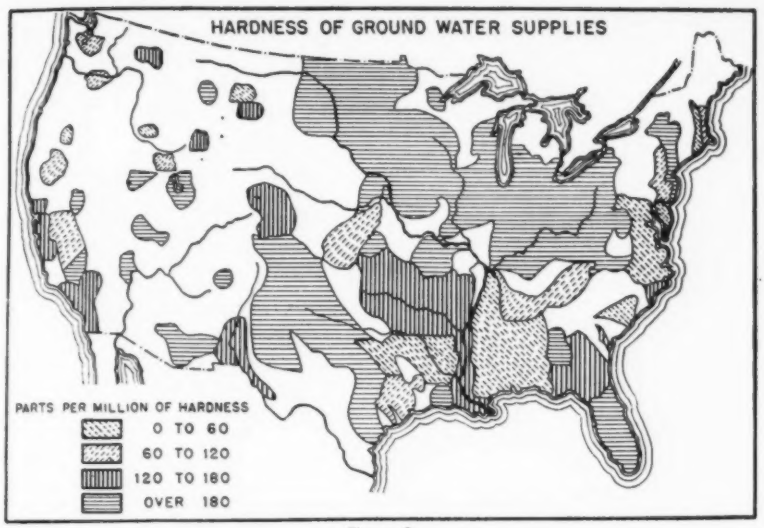


Figure 3

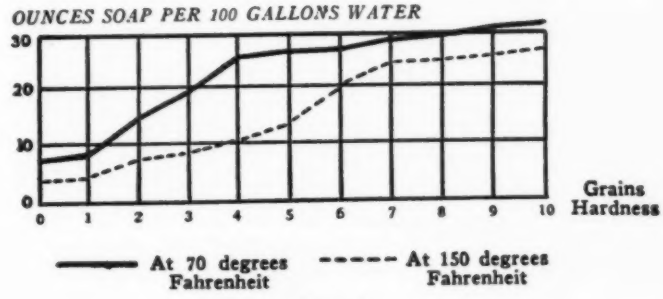
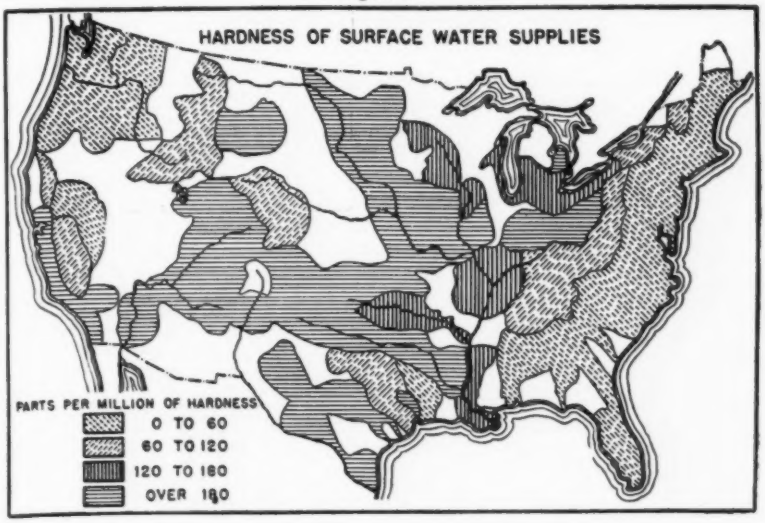


Figure 1

Figure 4



WFO 42b...

Small soap makers at Chicago meeting debate merits of revision or repeal. Discuss formation of new association.

SMALL soap manufacturers who gathered in Chicago September 13 at the call of E. O. Gillam, Fort Worth, Texas, soap manufacturer, were told by Mr. Gillam, who came to the meeting following a series of conferences with USDA officials in Washington, that WFO 42b will be revised in line with the suggestions made recently by the House Small Business Committee. Gillam said he had been authorized to report that, while quota restrictions on fats and oils will not be removed completely, it is the intention of the Department of Agriculture to "respect the recommendations made by the House Small Business Committee," aimed to ease the effects of quota restrictions on small soap producers. Steps were also taken at the meeting to start a permanent organization of small soap makers, through which effective action can be taken to protect the interests of participants.

While conceding that the assurances of sympathetic cooperation by USDA officials are encouraging, the Chicago gathering resolved to continue the drive, initiated last January, to secure complete removal of restrictions on use of fats by soap makers by repeal of WFO 42b. Even though 42b should be revised in compliance with the suggestions of the House Small Business Committee, the conference agreed that it is impossible to see how any good can result from the order remaining in effect. Some factors in the world situation may warrant retention of the order, it was recognized. The sense of the gathering, however, was expressed in the demand that Washington authorities "should prove to us that this order is necessary." This attitude Mr. Gillam was instructed to present to Secretary Anderson.

Should the move to obtain repeal of quota restrictions be unsuccessful, it was decided that further modifications of the order would be sought, which, while maintaining an over-all quota for fats and oils, would permit the soap maker to fill his quota from the type of oil his business requires. One manufacturer told of having a surplus of coconut oil but a shortage of soybean oil, badly needed for his type of product. He complained that he must mark time until the next quarter before he can get the oil that he needs. Another speaker reported that he has plenty of soybean oil but no tallow which he requires. Still others told of being forced to discontinue production of many much needed types of soap and to concentrate on others which can be produced from available materials with at least a small margin of profit.

The urgency of the need for removal of bureaucratic restrictions was stressed by various speakers. That the soap shortage is a *planned* shortage was charged by one manufacturer, the purpose being, as he asserted, to enable synthetic detergents to obtain a firm foothold on the market, and keep it after soap makers can again operate freely. "If we are turned loose and can expand our operations without bureaucratic restrictions," he said, "we could recover the ground we have lost and meet this competition from the synthetics before it gets ahead of us."

Black market operators also came in for discussion. In one section of the country, it was reported, fourteen violators of the fat quota restrictions had recently been brought into court. Elsewhere the situation was pictured as equally bad, confronting Washington with the realization it was asserted, that government or-

THE promise of the USDA to "respect" the recommendations of the House Small Business Committee by no means carries with it the assurance that all the suggestions of this committee will be put into effect immediately, or ever, SOAP'S Washington representative has learned. One recommendation has already been acted upon,—allocation of coconut oil to all soapers regardless of whether or not they used high lauric acid oils before the war.

As to the other recommendations, the USDA indicates that they are under consideration, but that no decision has been reached yet whether or not any or all of these additional recommendations will result in further changes in WFO 42b. A request has been received by USDA that a meeting of the Soap Industry Advisory Committee be held before any decision is made. An official of the USDA indicated that such a meeting might be called. Meanwhile, it is now almost six months since the hearings were held in Washington, and almost two months since the recommendations of the House Small Business Committee were released.

ders and regulations can no longer be enforced. If allowed to continue, it was declared, the soap situation will quickly become as chaotic as OPA's present control of the distribution of meat.

Criticism was voiced at the lack of interest shown by the Association of American Soap and Glycerine Producers in the plight of the small soap maker. Secretary Edlund had been invited to attend the Chicago meeting but had "declined," Mr. Gillam Said. "Although Mr. Edlund is here in Chicago today," he remarked, "he has not seen fit to come in here or send a representative. This seems to indicate that the Association is not interested in our problems. What is needed is representation of the small soap makers in the Association's councils."

Only through strong, aggressive and united action on the part of small soapers can their interests be protected, several expressed opinions agreed. The advisability of starting a new soap association was discussed, but doubt was expressed that leadership and financial support would be forthcoming. J. A. Meinhardt, Chicago sanitary supply manufacturer, suggested affiliation of the small soap makers with the National Sanitary Supply Association and called on Leo J. Kelly, executive vice-president of that organization to outline its services.

Mr. Kelly explained how special committees on individual products have been organized among his group. Each committee, he said, functions as a trade association within a trade association to handle its own individual trade problems. Such a product group could be set up for soap makers, he indicated, if enough soap makers joined the association to make it worth while.

The conference instructed Mr. Gillam to investigate Mr. Kelly's offer and later circulate to all who have attended the various meetings a referendum for a decision as to whether an independent organization should be organized or affiliation with the National Sanitary Supply Association be considered.

Those in attendance at the Sept. 13 conference in Chicago, in addition to Mr. Gillam, his secretary, Miss J. Wyche, and A. C. Ticknor of the Gillam Soap Works at Fort Worth, were as follows:

G. A. Buerki, West Disinfecting Co., Chicago; F. J. Pollnow, Jr., Vestal Labs., St. Louis, Mo.; Roy L. Wilson, Allen B. Wrisley Co., Chicago; Hugh S. James, James Soap & Chemical Co., Houston, Tex.; E. A. Meyer and W. J. Butram, Green Bay Soap Co., Green Bay, Wis.; Theo. B. Robertson, Jr., Robertson Products Co., Chicago; Leo J. Kelly, National Sanitary Supply Association, Chicago; Walter Yaeger, Arrow Mills, St. Louis; Lee S. Peck, Peck's Products Co., St. Louis; T. E. Joyce, National Soap & Refining Co., Des Moines; R. J. Lee, Lee Soap Co., Denver, Colo.; M. Weil, Cleveland Soap Mfg. Co., Cleveland; Ralph A. Haag, Haag Labs., Blue Island, Ill.; J. A. Rosenberg, Lavo Co., Milwaukee; E. B. Lampman, Lan-O-Sheen, Inc., St. Paul; John R. Nelson, The Selig Co., Atlanta; H. J. Brownstein, Hysan Products Co., Chicago; C. R. Lichtenberg, Chicago Sanitary Products Co., Chicago; Alex S. Barr, Illinois State Penitentiary, Stateville, Ill.; J. A. Meinhardt, J. A. Meinhardt & Co., Chicago; Earl R. Record, Record Soap Co., Chicago; F. H. Clatt, Olo Soap Co., Beaver Dam, Wis.; H. E. Eden, Houston Oil Field Chemical Co., Houston, Texas.

Recommendations of House Small Business Committee For Revision of WFO 42 B

THE Committee on Small Business recommends that the Department of Agriculture should take immediate steps to preserve and strengthen the competitive position of small firms engaged in the manufacture of soap and soap products by the following actions pertaining to the controls provided under War Food Order 42b:

1. War Food Order 42b should be retained in effect, with the modifications suggested below, until such time as supplies of inedible fats and oils more nearly equal demand.

2. In the computation of base period usage of fats and oils firms should be given the alternative of using the period 1940-41 or 1944-45, whichever is the most advantageous.

3. The percentage quotas of inedible fats and oils for the manufacture of soap and soap products should be reduced to all manufacturers in an amount sufficient to produce a quantity of fats and oils as a bonus equal to the requirements of the following proposed amendments to War Food Order 42b:

(a) That section 1460.33 (b) (2) to be amended so as to read:

Any manufacturer who has used his quotas for all classes of soap for any calendar quarter may use an additional amount of fats and oils up to his base period usage in the aggregate for soap in such calendar quarter in addition to his quotas, but, in no event, shall this bonus exceed 60,000 pounds of fats and oils per calendar quarter * * *

4. All exempt uses should be included in current use computations and all other uses of inedible fats and oils should be controlled on a basis equal to that applicable to that used in the manufacture of soap and soap products.

5. The present policy being followed by the Department of Agriculture to assist hardship cases should be continued.

6. The Department of Agriculture should immediately amend War Food Order 42b so as to permit the distribution of coconut and other imported oils to all applicants who used fats and oils for soap and soap products manufacturing during the base period and this should be done in proportion to their use of all fats and oils during that period.

The Department of Agriculture has already acted on recommendation 6, by making high lauric acid oils available to all soap makers regardless of whether or not they used such oils before the war. No action has as yet been taken on the other recommendations of the House Small Business Committee, nor has the USDA indicated when its decision as to possible action might be expected. It is anticipated, however, that a meeting of the Soap Industry Advisory Committee will be held before any decision is reached.

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TRADE NEWS. . . .

Introduce New Cleaner

Hood Chemical Co. last month initiated an extensive promotion in the Chicago area for its new household cleaner, "Sing," which includes heavy newspaper schedules, use of radio, door-to-door sampling and window displays in retail stores. K. P. Dietrich, president, and J. R. Dorning, promotion manager, were in Chicago to give personal supervision to the project. Conferences were held with the Harley F. Jones Co., brokers, and with jobbers and representatives of chain and independent stores.

BIMS End Golf Season

The BIMS of New York, Buyers, importers, Manufacturers and Salesmen of soaps and toilet preparations, held their final golf tournament of the 1946 season at Wheatley Hills Golf Club, East Williston, L. I., on Friday, September 13. Approximately one hundred members and guests were on hand for a day of golf, topped off by a steak dinner. Arrangements were in charge of Martin Schultes of Hewitt Soap Co. Among the prize winners were Al Bradley of Kay-Daumit Co., John H. Curry of Ogilvie Sisters Sales Corp., Ray F. Ougheltree of Bri-Test Products Corp., Louis Bezard of Parfums Schiaparelli, Peter L. Forsman of C. H. Forsman Co., Richard H. Grant of Houbigant Sales Corp. and J. E. Valentine of Oxzyn Sales Co.

Turco Adds to Staff

Turco Products, Inc., Los Angeles, makers of industrial cleaning products announced the recent appointments of Clark E. Jackson and Michael Donovan to their technical service department.

Mr. Jackson is a graduate of Tarkio College, Tarkio, Missouri, and formerly served as assistant to the science department, Assuit College, Assuit, Egypt. He has done post-graduate work in chemistry and research at the University of California. During World War II he was assistant laboratory officer, chemical division at the

DONOVAN

JACKSON

Mare Island Navy Yard Industrial Laboratory, San Francisco.

Mr. Donovan is a native of Troy, New York and a graduate of Rensselaer Polytechnic Institute. He is experienced in the field of chemical engineering. His war years were spent in the U. S. Navy where he served as plastics technologist, Jeffersonville Quartermaster Depot with rank of Lieutenant.

P & G Retires Veterans

Four employees of Procter & Gamble Co.'s Chicago plant, with service records totalling 157 years were retired recently. The quartet included Edward A. Bauer, laboratory analyst, 52 years' service; Peter Cygan, still and evaporator operator, 39 years' service; George J. Bauer, gate watchman, 45 years' service; and Adolph Mutter, locker room attendant, 21 years. At a farewell party, L. E. Strub, Chicago plant superintendent, presented each veteran with a token gift and wishes for "the best of everything."

Ralph Vaughn Dies

Shulton, Inc., New York, have announced the death, on September 14th, of Mr. Ralph C. Vaughn, who had been with the company since March, 1942, in charge of Canadian sales and sales for New York department stores.

WAA Surplus Soap Sold

A fixed price offering (sale No. 4-1647) of 2,500,000 pounds of government surplus, all-purpose soap was announced by the New York Regional Office of the War Assets Administration in September. Orders were received until October 5th. The all-purpose soap sold was manufactured by Proctor & Gamble, Colgate-Palmolive-Peet, Olive Oil Soap Co., and others, and was for hard, soft, or salt water. The soap, in three pound bars, was packed 20 or 25 pounds to the case.

Price Relief Applications

In response to an inquiry from *Soap & Sanitary Chemicals*, the Chemicals and Drugs Section of the Rubber, Chemicals, and Drugs Price Branch of OPA has written that since the issuing on April 25th of amendment 5 to the Max. Price Reg. 391, numerous letters of inquiry have been received as to the method by which adjustment could be obtained. In answer to these requests, copies of the amendment were sent but in many cases following this action, OPA did not receive applications for adjustment. Since April of last year, OPA has received 16 applications of which 12 were granted. Adjustments were also made for certain classes of soap under supplementary regulation 15 of the General Max. Price Reg. Under this latter since April, 1945, OPA has received 7 applications of which 4 were approved.

Lenth Joins Jaques

Dr. C. W. Lenth, at one time Chief of the Soap, Glycerine and Industrial Oils Division of the WFA, became Director of Research for the Jaques Manufacturing Co., Chicago, early in September. Dr. Lenth first joined the soap staff of the WPB in April, 1942 and retired from Government service in 1944 to return to private practice in Chicago as a consultant.

Soap Shortage Grows More Acute

A GREATER shortage of soap exists today than was the case during the war years. This shortage may be expected to continue as long as the raw material scarcity exists. It is likely that in the next few months the situation will get worse. In a presentation of this situation by E. A. Meyer, Deputy Administrator, Production and Marketing Administration, before representatives of the press, at the Hotel Waldorf-Astoria, New York, on September 20th, 1946, the following facts were brought out to substantiate these statements: A population grown by an estimated 9,000,000 persons, increased so far as soap consumption is concerned, by the 10,000,000 men and women formerly in the armed services, who now must buy their soap from civilian sources, now keeps itself, its clothes and its dishes clean with about three-fourths the amount of soap consumed in pre-war years. From a pre-war figure of 2,000,000 pounds annually, fats and oils imports dropped off to less than 1,000,000 pounds during the war and have continued low.

Mr. Meyer stated that all the copra crushing plants in the Philippines were destroyed with the exception of one small plant and that copra now arrives in the States in the uncrushed state and must be pressed here. In addition, the copra crushed here is not all for the U. S. market but is allocated among this and other nations according to international agreements. Normally, that is, in peace time, one-third of U. S. soap is made from vegetable oil, most of it imported, and two-thirds from animal fat materials. Soap manufacturers are limited in the amount of domestically produced vegetable oils they can use. Soap is now being made, 80% to 90% of it, from animal fat materials.

Mr. Meyer said that the United States exported 200,000,000 to 250,000,000 pounds more fats and oils than it imported in 1945 and 1946, whereas in pre-war years the net balance was 1,500,000,000 pounds in favor of imports. The over-all situation in fats and oils is so serious that the department has announced that after the end of this year, it will undertake only limited commitments for export.

In trade circles it was admitted the situation is chaotic and that the soap industry today is not supplying more than two-thirds of the demand that exists. Pointing to the fact that cattle slaughtered in Federally inspected plants is now one-sixth of that a year ago today, it was predicted the situation in the soap field would become worse.

The apparently greater supply of toilet soap is illusory. It is due to the supply, not too large, of fancy, perfumed soaps sold commonly in drugstores or department stores and representing roughly about 5% of the total amount of toilet soaps produced. If every ounce of fats used in such soaps were diverted to other soap manufacture, the difference would be scarcely appreciable, Mr. Meyer indicated.

Figures reveal the decrease in consumption of fats and oils in the United States during the war years and after. In 1942, Mr. Meyer said, civilian use of fats seventy-one pounds per capita annually. In 1943 this figure had dropped to sixty-seven pounds per capita. In 1945 it was sixty-four pounds and preliminary estimates for this year are sixty-two pounds per person, the lowest since the depression year, 1933. Per capita use of soap fats in 1942 was fourteen pounds. Preliminary estimates for this year are eleven pounds.

It was estimated that the fat salvage program alone supplied from 10% to 11% of the total output of inedible tallow and fats during the last three years of the war. It was agreed that the housewife will have even less soap, if she does not continue her salvage effort where practicable.

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New Paper Soap Leaves

Charles F. Hubbs & Co., New York, have announced a new small dispensing package of paper soap sheets which they term "soap leaves." The new package of soap-impregnated paper is designed to retail for ten cents, and contains 30 4½ x 5 inch sheets. The company is located at 385 Lafayette St., New York.

W-H-C Moves N. Y. Office

Welch, Holme & Clarke Co., New York, 108-year-old oil, tallow, grease and chemical supply firm, recently moved its New York offices from 563 Greenwich St. to 439 West St., New York 4. The company has also acquired a warehouse in Newark, N. J. Before moving to its former quarters on Greenwich Street, W-H-C was located at 383 West St. for 75 years. Mr. E. D. Stults, head of the company, with which he has been associated for the past 48 years, is recovering from an illness which has confined him to his home for the past two months.

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Cocoanut Oil Allocation

Soap makers were informed of their share of the 755 million pound allocation of cocoanut and other high lauric acid oils, early in October by the U. S. Dept. of Agriculture's Fats and Oils Branch. These oils may be used within the overall quota limitations of WFO-42b. Soap makers who did not use high lauric acid oils in 1940-41 are sharing in the present allocation.

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Hercules Advances Two

The Hercules Powder Co., Wilmington, recently announced two new appointments. Robert E. Segerdell has been appointed office manager of the San Francisco office, and Thomas E. Brown has been appointed assistant superintendent of the Bacchus, Utah, plant.

Formerly assistant office manager of the New York office, Mr. Segerdell succeeds Cliff A. Mace, who will remain in San Francisco until January 1, 1947, when he will be transferred to the Hercules offices in Wilmington.

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New Diamond Alkali Plant

Construction is now under way for a new industrial chemical plant for Diamond Alkali Co., at Houston, Tex. The plant will eventually serve the company's customers in the gulf-southwest areas with chlorine and caustic soda, production of which is expected to start in mid-1948. Located on the Port Terminal Railway near Deer Park, the Diamond property occupies approximately 250 acres. The plant itself will cover about 40 acres.

Chemical Exposition in Chicago

THE fourth National Chemical Exposition, staged in the vast Chicago Coliseum, Sept. 10 to 14, presented a comprehensive review of chemical progress over the past two years. Displays by producers and processors of chemical products revealed the impressive advance which chemical science has made in many fields, including soaps, insecticides, disinfectants, detergents, deodorants and varied other phases of sanitation.

At the booth of Mallinckrodt Chemical Works, St. Louis, a new 24-page booklet was distributed, describing Mallinckrodt's line of metallic soaps, their properties and applications, including processes for preparation of soap gels for lubricating greases, suspended pigments, petroleum waxes and other purposes. Acting as hosts were Wallace M. Kelley and P. A. Krueger from St. Louis headquarters.

Tetrosodium pyrophosphate as a soap builder was featured by Victor Chemical Works, Chicago, along with displays of the company's contributions to the chemistry of foods, pharmaceuticals, petroleum, textiles, flame proofing and metal treating. One of the miniature dioramas in the exhibit pictured a modern soap plant at the moment when T S P is being introduced into the mixing line. Following the Exposition, the Victor exhibit is to be permanently installed at Chicago's Museum of Science and Industry. Heading the reception line was D. G. Brower, director of sales and personal research.

"Molecules for a multitude of industrial uses" was the theme of the exhibit of Emulsol Corp., Chicago, with E. S. Thayer, sales manager, in charge. Products featured included anion active detergents, cation active detergents and emulsifying agents of both the ionic and non-ionic types. Stress was placed on the functioning of these surface-active compounds in a wide range of industries, including household, industrial and animal pest control, cleaning, laundering and other services. Of particular interest were new emulsifiers, cataloged in the "H-series," and developed during the past year, for application in DDT and other insecticide water miscible sprays, solvent cleaners, emulsion polishes, etc.

Ansul Chemical Co., Marinette, Wis., presented a graphic story of how one of their products, methyl chloride, helped get insect pests under control in Japanese territories occupied by our military forces. Also featured by the Ansul staff was the fumigant, sodium dioxide, used to destroy molds and other micro-organisms causing rapid spoilage in fruits and for control of weevils, rats or other vermin, commonly infesting stored cereals and grains and warehoused foods. Serving as host was C. Victor Mars, sales manager.

Bareco Oil Co., Tulsa, Okla., showed a pictorial display of processes, products and industrial uses for their "Be Square" microcrystalline waxes. B. H. Clary, sales manager, in charge. Also exhibiting synthetic waxes was the Cornelius Products Co., New York, with E. Alt as host.

Hercules Powder Co., Wilmington, Del., made liberal use of light and color to set off their display of varid products, including "Thanite" and DDT. Theodore Marvin was host.

Insecticides, moth proofing agents, laundry sours and other materials were shown by Davidson Chemical Co., Baltimore. Commercial Solvents Corp., New York, devoted a corner of their extensive exhibit to their line of nitro paraffin compounds for insecticidal and other uses, whose comparatively recent development has opened a new field of synthetic organic chemistry for manufacturers of insecticides and other products.

Skelly Oil Co's booth was devoted to presentation of the part played by "Skelly-solve" in production of insecticides, fly sprays, polishes, oil and fat extraction and other purposes.

Dow Chemical Co. directed attention to their new "2,4-Dow" weed killer, methyl bromide and chloropicrin for agricultural uses, and chemicals for insect control. Pamphlets, sound-slide films and a large staff of research specialists and sales advisors helped tell the story of Dow's contributions to chemical progress.

Velsicol Corp., Chicago, spotlighted a huge enlargement of a Bikini bomb photograph to emphasize the new era in insect control represented by their "1068" insecticide. Solvents for carrying DDT were also presented, along with resins for the soap maker and other developments of the company's research laboratories. N. G. Mooneyham and M. Holland in charge.

Mass distribution of germicides utilizing quaternary ammonium compounds will shortly be in full swing, a representative of Winthrop Chemical Co., New York, stated at their booth, where these materials, pioneered by Winthrop, were presented. Until recently, he said, 98 per cent of the company's output had been reserved for military uses. This demand now being discontinued, the concern is again at liberty to promote use of these bactericides in the restaurant, and tavern fields, in food plants, on dairy farms and other outlets.

Lecithin as a stabilizer and emulsifier for soaps and a surface tension agent for insecticides was the theme of story told by the W. A. Cleary Corp., New Brunswick, N. J., in its booth. To meet the growing demand for lecithin, the Cleary Corp. has an extensive expansion program under way, L. Russell Cook, vice president stated.

"Chemical Trail Blazers," an Exposition educational feature which portrayed outstanding recent chemical developments, included an exhibit by Carbide and Carbon Chemical Corp., of its new "6-12" brand insect repellent. A cage full of mosquitoes in the booth offered visitors an opportunity to test the efficacy of the product for themselves.

Alox Corp., Niagara Falls, N. Y., had a display of their basic oxygenated hydrocarbons of interest to manufacturers of oil- or water-soluble

(*Turn to Page* 65)

a timely DOW specialty

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Dow presents to the perfumer an attractive new specialty, C-64 . . . ready to add a note of opulence to many formulations for perfumes, soaps, cosmetics. C-64 possesses a powerful, spicy odor with a slightly minty touch, somewhat suggestive of patchouli oil. Blenders will find it extremely valuable for all types of oriental perfumes. It is also excellently adapted to the preparation of colognes and for inclusion in soaps and cosmetics.

A very stable, crystalline material, C-64 blends well with citrus oils and dissolves in alcohol, even when diluted. In purity and uniformity, it conforms to Dow's traditionally high standards. Write to us on your company letterhead for working sample and full details.

DOW AROMATIC PRODUCTS: *Coumarin, Cyclotene, Diphenyl Oxide, Diphenyl Methane, Gardanthrol, Indol, Methyl Anthranilate, Methyl Phenyl Carbinyl Acetate, Methyl Salicylate, Palatone, Phenyl Ethyl Acetate, Phenyl Ethyl Alcohol, Styrene P-100, Sylvenol, and others—*

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Sturm Advanced

D. E. Sturm, credit manager of R. M. Hollingshead Corporation, Camden, N. J., since 1940, has been made

D. E. STURM

assistant treasurer of the corporation. In this new capacity he will assist Weir Mitchell, company treasurer. Prior to joining the Hollingshead organization in April of 1940, Mr. Sturm had been secretary-treasurer of the Textileather Corp., of Toledo, Ohio, for twelve years. In addition to his new duties, Mr. Sturm will continue to be responsible for the Hollingshead credit department, which is now under the direct supervision of Joseph Laputka.

Rosin Stocks At New Low

In view of the fact that domestic stocks of rosin are expected to reach the lowest carryover on record and not exceed 350,000 drums on April 1st, 1947, the beginning of the next new crop year, the chemicals division of the Civilian Production Administration has recommended a sharply reduced export quota for the third quarter of the current year, October-December. According to the producers, wood rosin production for the year ending March 31, 1947 is expected to total 1,005,000 drums as against 757,560 drums in the twelve months ending March 31, 1946. Gum rosin production is not expected to go above 750,000 drums as compared with 694,476 drums produced in 1945-46. With Government estimates on domestic consumption running 500,000 drums heavier than last year, when 1,254,000 drums were used, and with price controls removed, the C.P.A. has seen fit to recommend to the Office of International Trade, Department of Commerce, that a new export quota of only 75,000 drums of gum and wood rosin be set up for the third quarter.

Bubble Sign Uses Sulframin

The huge bubble-blowing sign now attracting crowds in the Times Square section of New York City erupts 8 to 10 foot bubbles—hundreds of them at a time. Ultra Chemical Works, Paterson, N. J., report that recently a ton of their product, "Sulframin," was sold to the builders of this sign. The gigantic electrically lighted sign (2/3 of a block long), located atop the Strand Theatre building advertises a popular brand of soap.

A. O. C. S. Chicago Meeting

Two symposia, one on drying oils and one on the industrial uses of oils and fats, as well as soap papers will be among the features of the technical program for the 20th annual fall meeting of the American Oil Chemists' Society to be held in Chicago on October 30, 31, and November 1 at the Edgewater Beach hotel. Chairman is Howard C. Black, Swift and Company, Chicago. In charge of the soap section is L. B. Parsons, Lever Brothers Co., Cambridge, Mass., and of the drying oil symposium, S. O. Sorensen, Archer-Daniels-Midland Co., Minneapolis, who is president of the Society.

Cosmetic & Perfume Course

The course in perfumery and perfume materials, which has been given at the College of Pharmacy of Columbia University by Dr. Wimmer for many years, will be taught by Edward Sagarin, of Givaudan-Delawanna, Inc., New York, author of *The Science and Art of Perfumery*, starting this fall, the school has just announced. In the course, Mr. Sagarin will cover the history of perfumery, the natural and synthetic raw materials of perfumery, their methods of production, their utilization in odors and flavors, and the physiology and psychology of the sense of smell and related senses. The course is believed to be the only one of its kind in the United States.

Florasynth Appoints Payne

Florasynth Laboratories, Inc., New York, have announced the appointment of Arch Payne of Arlington,

ARCH PAYNE

Texas, as new head of their Dallas office. Mr. Payne has been associated with major oil processing and chemical organizations since 1919.

Petroleum Base Cleaner

An announcement by Standard of California, San Francisco, describes a new washing compound that uses petroleum as its basic raw material. Large scale production already is under way at Standard's Richmond refinery. The new product, a synthetic detergent, will be handled by Oronite Chemical Company, a subsidiary of Standard of California. It is not planned to sell direct to retailer or consumer, but instead the product will be marketed to industrial users and trade outlets, which will package and distribute it to retailers.

Described as an all-purpose cleanser, it is said to be equally effective in laundering fine fabrics, dish washing, cleaning the family car and in cleaning industrial equipment, such as bottles and cans. It is also useful in making insecticides and herbicides.

Advances at Lien Chem.

Lien Chemical Co., Chicago, recently announced the appointment of James R. Fillebrown as general sales manager. Mr. Fillebrown has served with the company since 1943. Albert H. Stahnke was appointed purchasing agent and production manager.

Why talk about a pig's shoulder to you?

In testing meat can-linings, pork shoulder is unique.

The pork shoulder combines fats and other chemicals, including sulphur-bearing materials, whose action upon the enamel is unusually severe.

As you know, cans are filled, closed, put in a retort, and the heat is turned on.

Since the heat in the retort travels slowly through the pork shoulder, the container must be held at a high heat for a long time to get the center of the package at the proper temperature.

In this test, the enamel lining on the inside of the can takes an extra-special beating. It's the kind of tough workout American Can scientists like as a test for can-linings.

That's why pork shoulder is a favorite and standard test-pack at our Central Research Laboratories, Maywood, Illinois.

You can see from this instance that quality control at Maywood is no "ivory tower" process. In fact, linings, adhesives, steel, tin plate, solder, seams, and paper—components of the merchandise we sell you—are all subjected to appropriate, realistic tests.

You get an extra dividend from these tests, too. For the wide margin of safety in Canco containers has through the years given meaning to the statement: "No other container protects like the can."

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Lever Wins Safety Awards

In recognition of a consistently high industrial safety record in five major soap and vegetable oil manufacturing plants, the Lever Brothers Company has been nominated to receive an award for "Distinguished Service to Safety" from the National Safety Council. The award, which is the council's highest and which Lever Brothers is receiving for the second straight time, is for the safety records achieved by plants in Hammond, Ind., Cambridge, Mass., Baltimore, Md., Edgewater, N. J. and St. Louis, Mo.

The finest of these records is held by the Lever plant at Edgewater, N. J., which for nine consecutive years, 1937-1945, has held the first place in the national ratings for accident prevention among vegetable oil manufacturers. The plant's 1945 record was 1,505,000 man hours without a lost time accident.

For three consecutive years, the Lever Hammond, Ind. plant has established the nation's best safety record in the soap manufacturing industry. The Hammond plant in 1945 turned in a record of 3,644,000 man hours without a lost time accident. Two other Lever plants, those at Cambridge, Mass. and Baltimore, Md., have ranked second and third respectively in the national accident prevention records of the Safety Council for the last three years. Only Lever's Hammond, Ind. plant has topped them in accident prevention achievement. Lever's soap plant at St. Louis, Mo. has been ranked in eighth place for three years, 1943-45, among the nation's medium sized plants in accident prevention statistics.

Edward Frank Dies

Edward Frank who for seven years was soap maker and plant superintendent for the Laurel Soap Manufacturing Co., Philadelphia, died late in August in Los Angeles, Calif., from a heart attack. Mr. Frank resigned from Laurel early in 1946 because of ill health. At the time of his death he was engaged in supervising the erection and equipping of a soap factory for the Silicon Products Co., Los Angeles. He was the son of a soap maker and learned the business in Germany prior to emigrating to the United States in 1936. His wife and two sons, all residents of Los Angeles, survive him.

Hudnut Buys Raymond Labs

The sale of Raymond Laboratories, Inc., New York and Saint Paul, to Richard Hudnut, Inc., New York, has been reported. The Raymond Laboratories, makers of "Ravye" creme shampoo and other preparations for the hair, employ over 500 people and have been in business over 12 years. Their headquarters are in New York and the laboratory is in Saint Paul.

Brazilian Babassu Exports

The purchase of Babassau kernels and oil by the U. S. from Brazil under an agreement between the two countries is not affected by a Brazilian government decree of August 30 prohibiting exports of certain fats and oils until further notice, the U. S. department of Agriculture said recently. Under a four-year agreement originally reached July 25, 1942 between the U. S. and Brazil, the latter country agreed to sell to the Commodity Credit Corporation not less than 75 per cent of its babassu output, in the form of kernels or oil. This agreement, as it was about to expire, was extended until July 24, 1947, but reduced the quantity available to the United States to 50 per cent. Brazil's production of babassu kernels for 1946 is placed at 60,100 short tons. The Brazilian export prohibition covers animal fats and specified vegetable oilseeds and oils, including babassu kernels and oil (except those set aside for shipment to the United States under the agreement). Other oleaginous products affected by the decree are copra, palm, ouricuri, tucum and their respective oils, and cottonseed and peanut oil. The export restriction is designed to conserve oil supplies for Brazilian soap makers.

Jones Addresses Chi. Club

O. E. Jones, vice-president and member of the board of Swift & Co., Chicago, was guest speaker at the first fall meeting of the Chicago Sales executives Club, Sept. 12, his subject being "Some Major Problems of Top Management in Industry."

New Dry-Cleaning Soaps

Pennsylvania Salt Manufacturing Company, Philadelphia, recently reported that a number of new dry-cleaning soaps have been developed at their laundry and dry cleaning laboratories at Whitemarsh. "Erusto Filter Soap," a free flowing liquid dry-cleaning soap for use in petroleum solvent systems equipped with filter and still, or filter only, is claimed to remove ground-in soil and water-soluble stains. It may be used with added moisture. It is packed in five and fifty-five gallon drums. "Erusto Synthetic Solvent Soap," a highly concentrated, balanced soap for use in synthetic solvent systems using perchlorethylene, trichlorethylene or carbon tetrachloride, dissolves or emulsifies with chlorinated solvents forming a homogeneous mixture. This is marketed in five-gallon cans and fifty-five gallon drums. "Erusto Liquid Wet Cleaning Soap," for wet cleaning, brushing and pre-spotting, is a concentrated liquid coconut oil soap blended with penetrating oils and solvents. This product is packed in five-gallon cans or 55-gallon drums.

Pierre Danco Dies

Pierre Danco, vice president of Gerard J. Danco, Inc., and Gerard J. Danco International Corporation, New York, importers of aromatic chemicals, died September 18th at his home after a long illness. He was seventy-five years old. Mr. Danco was born in Belgium and was a graduate of the University of Louvain.

C & C Advances Two

Two branch managers were moved into new posts in September according to word from Carbide and Carbon Chemicals Corporation, New York. Richard M. Joslin, former manager of the Charlotte office, was moved to the Detroit office where he will take the place of George D. Garrett, Jr., who joined Carbide and Carbon Chemicals Limited, in Toronto, Canada. Mr. Joslin's place was taken by Bruce A. Gustin, Jr., who joined the organization in 1937 and recently worked with the Manhattan Engineering District at the company operated Oak Ridge atomic energy plant.

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NEW TRADE MARKS

The following trade-marks were published in the September issue of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

GOLD CUP—This in upper and lower case, extra bold, black letters for shaving cream. Filed Mar. 29, 1945 by MacGregor Men's Toiletries, Inc., New York. Claims use since Mar. 9, 1945.

CANDLELIGHT—This in upper and lower case, bold, script letters for polish for precious metals and jewelry. Filed Sept. 18, 1945 by Candlelight, Plymouth, Mich. Claims use since Nov. 22, 1937.

CANDLELIGHT — This in upper and lower case, bold, script letters set on an angle and superimposed on two lighted candles in holders for polish for precious metals and jewelry. Filed Nov. 1, 1945 by Candlelight, Plymouth, Mich. Claims use since Sept. 22, 1945.

E-Z-DU — This in upper case, extra bold letters for liquid and powder cleaners for miscellaneous uses. Filed Dec. 15, 1945 by E-Z-Du Products, San Francisco. Claims use since Oct. 1, 1945.

FREN—This in upper case, extra bold, black stencil letters for soap in powdered form. Filed Jan. 30, 1946 by Tish Products Corp., Brooklyn. Claims use since Dec. 4, 1945.

LINNEA—This in upper and lower case, bold, script letters for shampoo. Filed July 30, 1945 by Linnea Perfumes, Inc., Chicago. Claims use since Dec. 10, 1937.

MARY SCOTT ROWLAND—This in upper and lower case, bold, script letters for shampoos. Filed Jan. 17, 1946 by Mary Scott Rowland, Ltd., New York. Claims use since 1887.

LOOSITE — This in upper and lower case, bold, outline script letters for chemical solvent and cleaner for removing residues of petroleum products, etc. Filed Feb. 1, 1946 by Petroleum Solvents Corp., New York. Claims use since Feb. 1, 1934.

SILOO—This in upper case, bold open letters for chemical solvent and cleaner for removing residues of petroleum products. Filed Feb. 1, 1946 by Petroleum Solvents Corp., New York. Claims use since Dec. 1, 1935.

MARABOU — This in upper and lower case, bold script letters for cream shampoo. Filed Feb. 2, 1946 by Civray, Inc., New York. Claims use since Jan. 15, 1946.

VICTOR—This in upper case, bold letters for poisons for insects, rodents and other pests. Filed Mar. 27, 1947 by the Animal Trap Co. of America, Litiz, Pa. Claims use since Feb. 11, 1946.

EVERCIDE—This in upper case, bold letters for insecticides. Filed Mar. 28, 1946 by McLaughlin, Gormley King Co., Minneapolis. Claims use since Mar. 8, 1946.

TRI-FOAM—This in upper case, extra bold, black letters for soap powder. Filed Nov. 10, 1945 by Pemberton Products Co., Irvington, N. J. Claims use since May 1, 1945.

MONEL-O — This in upper case, bold letters for cleaners made of metal textile. Filed Jan. 15, 1946 by International Nickel Co., New York. Claims use since Nov. 28, 1945.

PILOT—This in upper case, extra bold, black letters for soap. Filed Feb. 9, 1946 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Jan. 25, 1946.

WITCHERY — This in upper and lower case, bold, script letters for hair shampoo. Filed Sept. 15, 1945 by Primrose House, Inc., New York. Claims use since Aug. 14, 1945.

FLYOSAN — This in upper case, bold letters for insecticide. Filed Jan. 10, 1946 by William Peterman, Inc., Newark, N. J. Claims use since June 24, 1919.

TAG—This in upper case, bold letters for insecticides, germicides and parasiticides. Filed Jan. 29, 1946 by California Spray-Chemical Corp., Richmond, Calif. Claims use since Dec. 18, 1945.

VELSICOL — This in upper case, bold, stencil letters for insecticides and fungicides. Filed Apr. 3, 1946 by Velsicol Corp., Chicago. Claims use since Sept., 1940.

1068—This in upper case, bold stencil numerals for insecticides and fungicides. Filed Apr. 3, 1946 by Velsicol Corp., Chicago. Claims use since Feb. 11, 1946.

VELSICOL — This in upper case, reverse letters across a "V" superimposed upon a circle. Filed Apr. 3, 1940 by Velsicol Corp., Chicago. Claims use since Sept., 1940.

COLONIAL BOUQUET — This in upper case, medium letters forming a circle for soap. Filed Sept. 27, 1944 by Colonial Dames Co., Ltd., Los Angeles. Claims use since May 6, 1940.

MIN-IT-SOL—This in upper and lower case, extra bold, black letters above the drawing of a minute dial of a watch for liquid soap solution. Filed May 11, 1945 by Marion Manufacturing Co., Atlanta, Ga. Claims use since Dec. 1, 1944.

COLEO—This in upper and lower case, extra black, bold letters for denture cleaner and soaps for toilet, laundry and household use and soap powders. Filed by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Mar. 25, 1890 on soaps for toilet and laundry, and household use, and soap powders; and since Dec. 20, 1945 on denture cleanser.

KE-TEC — This in upper case, open letters for cleaning and washing powder for electric dishwashing. Filed Jan. 8, 1946 by Kelite Products, Inc., Los Angeles. Claims use since Oct. 1, 1945.

LANO. WITE—This in upper case, bold letters for cleanser and polish for shoes, boots, leather goods, etc. Filed Feb. 7, 1946 by Knomark Manufacturing Co., New York. Claims use since Feb. 1, 1946.

Y-RUB—This in upper case, reverse lettering for cleaning fluid. Filed Feb. 11, 1946 by Demand Products

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MARYLAND GLASS CORPORATION, BALTIMORE . . . NEW YORK: 270 Broadway
CHICAGO: Berman Bros., Inc., 1501 S. Laflin St. . . . CINCINNATI: J. E. McLaughlin, 401 Lock St.
KANSAS CITY: Aller Todd, 1224 Union Ave. . . . MEMPHIS: S. Walter Scott, 608 McCall Bldg.
SAN FRANCISCO: Owens-Illinois Glass Co., Pacific Coast Division, 135 Stockton St.
ST. LOUIS: H. A. Baumstark, 4030 Chouteau Ave.

Co., San Francisco. Claims use since July 10, 1945.

THEEF — This in upper case, extra bold, black letters for washing and cleaning compound. Filed Feb. 13, 1946 by Blue Ribbon Products Co., San Francisco. Claims use since Nov. 21, 1945.

MAKE OFF—This in upper and lower case, bold letters for soap substitute. Filed Feb. 14, 1946 by Cosmex Corp., New York. Claims use since May 31, 1945.

SARDEAU — This in upper case, bold letters for shampoo. Filed Apr. 12, 1945 by Sardeau, New York. Claims use since Jan. 5, 1939.

PIED-PIPER—This in upper case, bold letters above a drawing of the fictional character for insecticide in powdered form for the extermination of roaches, ants and bedbugs. Filed Sept. 17, 1945 by De Pree Co., Holland, Mich. Claims use since Mar. 1, 1945.

PENETREME—This in upper case, bold letters for hair shampoos. Filed Sept. 18, 1945 by Raymond Laboratories, Inc., St. Paul, Minn. Claims use since Nov. 1, 1944.

JUVARE—This in upper and lower case, bold, reverse letters for shampoo. Filed Sept. 19, 1945 by L. B. Coulter, Salisbury, N. C. Claims use since May 8, 1944.

COCATE — This in upper case, bold letters for methyl ester of coconut oil fatty acids used as a solvent, surface active agent, etc. Filed Dec. 21, 1945 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since May 28, 1945.

FLOWER GARDEN—This in upper and lower case letters, one word above the other for bubble bath oil and salt. Filed Jan. 3, 1946 by Weldon, Inc., West Haven, Conn. Claims use since Feb. 4, 1942.

PRIZMA—This in upper and lower case, bold letters for shampoo. Filed Jan. 4, 1946 by Procter & Gamble Co., Cincinnati. Claims use since Dec. 8, 1945.

TIMSOL — This in upper case, extra bold, black, oversize letters for disinfectant, germicide, fungicide and deodorant. Filed Feb. 23, 1946 by Timsol Co., of America, Los Angeles. Claims use since Feb. 4, 1946.

RID-O-SECT—This in upper case, bold letters for insecticide. Filed Mar. 7, 1946 by M. J. Bennett & Co., New York. Claims use since Feb. 20, 1946.

DYNASTY — This in upper case, extra bold, black letters for shampoos. Filed Mar. 19, 1946 by Associated Products, Inc., Chicago. Claims use since Mar. 13, 1946.

ISOLDE — This in upper case, extra bold, black letters for shampoos. Filed Mar. 19, 1946 by Associated Products, Inc., Chicago. Claims use since Feb. 28, 1946.

AZTEC GLAZE—This in upper case letters above the drawing of a heathen god for glaze in liquid and paste form for polishing and cleaning automobiles, airplanes and finished lacquered and enameled surfaces. Filed Nov. 13, 1945 by Strand Castle Co., Lynwood, Calif. Claims use since Oct. 9, 1938.

CROMAX—This in upper case, bold, outline letters for floor wax. Filed Dec. 22, 1945 by G. H. Wood & Co., Toronto. Claims use since Oct. 27, 1939.

EMULSOWAX—This in upper case, medium letters for synthetic wax. Filed Feb. 28, 1946 by Cornelius Products Co., New York. Claims use since Nov., 1944.

FORMAX—This in upper case, open letters for medicated soap in granulated or powdered form. Filed Jan. 23, 1946 by Formax Co., New Haven. Claims use since June 15, 1918.

NEW PROCO—This in upper case, extra bold, black letters for chemical solvent preparation for cleaning tanks, suction lines and oil systems. Filed Oct. 8, 1945 by New Process Service Co., San Francisco. Claims use since Sept. 19, 1944.

NIRVANA—This in upper case, bold letters for shampoos, tooth powders, dentifrices, tooth pastes, etc. Filed Nov. 23, 1945 by Geza Stiassney, New York. Claims use since Aug. 20, 1945.

ERVANA—This in upper case, bold, outline letters on a scroll like design on a circle above to other scrolls for shampoo. Filed Nov. 27, 1945 by Hannah Klein, Brooklyn, N. Y. Claims use since May 31, 1945.

SUNKIST—This in upper case, bold, black ascending and descending letters for tooth paste, tooth powder and tooth cleanser. Filed Jan. 28, 1946 by Arnold Stoltz, New York. Claims use since Sept., 1938.

AKTICIDE—This in upper and lower case, bold, script letters for germicides. Filed Feb. 26, 1946 by Merriam and Co., Washington, D. C. Claims use since Dec. 11, 1945.

DISENTRAL—This in upper case, bold letters for germicide. Filed Feb. 26, 1946 by Vitamins & Pharmaceuticals, Inc., Dover, Del. Claims use since June 10, 1946.

BAZOOKA—This in upper and lower case, extra bold, black letters for insecticides. Filed May 16, 1946 by Nash & Kinsella Laboratories, Inc., St. Louis. Claims use since Sept. 9, 1944.

HIL-SEAL—This in upper case, bold, black letters for liquid floor preservative in the nature of a wax coating or wood filler. Filed July 10, 1944 by Hillyard Chemical Co., St. Joseph, Mo. Claims use since Jan., 1937.

BAA-BAA—This in upper and lower case, bold, script letters for compound for washing woolens. Filed Feb. 18, 1946 by Duncan MacKensie Co., New York. Claims use since Mar. 13, 1945.

The line drawing of a bird with a partially filled bucket over one wing and a cloth on the other wing for household cleaner. Filed Feb. 19, 1946 by Hood Chemical Co., New York. Claims use since Jan. 4, 1946.

FLEETICK—This in upper case, medium letters for ant exterminating preparations. Filed June 6, 1945 by Sanders B Co., Phoenix, Ariz. Claims use since May 9, 1945.

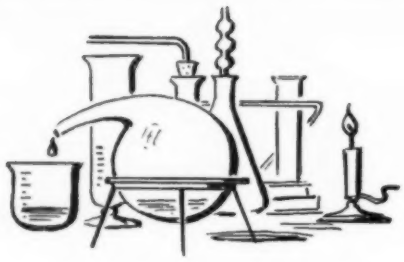
TRELLIS—This in upper case, open letters for shampoo. Filed Nov. 23, 1945 by Roycemore Toiletries, Inc., Chicago. Claims use since Sept. 14, 1940.

TEENTIMER—This in upper and lower case, bold, script letters for shampoos. Filed Dec. 12, 1945 by Teen Timer Laboratories Co., New York. Claims use since Apr. 30, 1945.

GRAND UNION—This in upper case, open letters one word above the

(*Turn to Page* 189)

TALLOW FATTY ACIDS • GLYCERINE • STEARIC ACID • RED OIL • WHITE OLEINE USP •



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BIDS AND AWARDS

Air Corps Paste Soap Bids

In a recent opening for miscellaneous supplies by the U. S. Army Air Corps, Wright Field, Dayton, O., the following bids were received on 335,000 pounds of paste soap: R. M. Hollingshead Corp., Camden, N. J., 8.4 cents; Davies-Young Soap Co., Dayton, 7.8 cents (price escalation clause); Puritan Co., Rochester, N. Y., 7.9 cents (price escalation clause) and Armour & Co., Chicago, 11.25 cents (price escalation clause).

Canal Toilet Soap Bids

The following bids were received on an unspecified quantity of liquid toilet soap in a recent opening for miscellaneous supplies by the Panama Canal, Washington, D. C.: Crystal Soap & Chemical Co., Philadelphia, $450; R. M. Hollingshead Corp., Camden, N. J., $420; Lanair Chemical Corp., Chicago, $336 (on 990 gallons instead of 1,000), accepted; Pacific Chemical Co., Los Angeles, $600; Eichenbaum Supply Co., New York, $720.

Treasury Dept. Soap Bids

Among the bids received on various quantities of scouring compound, powder and soap in a recent opening for miscellaneous supplies by the Treasury Department, Procurement division, Washington, D. C., were those on the following: 8,640 pounds of scouring compound—Imperial Products Co., Philadelphia, 9.1 cents in a 25-ounce can, 24 to a carton, and Day & Frick, Philadelphia, 4.85 cents a pound; 7,812½ pounds of grit soap—Unity Sanitary Supply Co., New York, 12 cents, Day & Frick, Philadelphia, 4.9 cents and Wm. Messer Corp., New York, 7.6 cents; 6,328½ pounds of grit soap—Unity Sanitary Supply Co., New York, 22 cents and Wm. Messer Corp., New York, 22 cents, $5.84 a case, packed 100 cakes to a case, each cake approximately 3¾ ounces; 96,000 pounds of laundry soap—Wm. Messer Corp., New York, 12.7 cents, and 20,000 pounds of soap paste—Harley Soap Co., Philadelphia, 7.2 cents; E. F. Drew & Co., New York, 8.125 cents; Crystal Soap & Chemical Co., Philadelphia, 15 cents; R. M. Hollingshead Corp., Camden, N. J., 14 cents and Wm. Messer Corp., New York, 14 cents; 150,000 pounds of soap powder, Sugar Beet Products Co., Saginaw, Mich., 15.54 cents.

Navy Wax Bids

In a recent opening for miscellaneous supplies by the Navy Bureau of Supplies and Accounts, Washington, D. C., the following bids were received on 80,000 gallons of floor wax: Oil Specialties & Refining Co., New York, lot 1, 92.95 cents and 2, 89.95 cents; Double-B Products Co., Hartford, lot 1, $1.56 and 2, $1.50; West Disinfecting Co., Long Island City, N. Y. lot 1, $1.407 MM rating and $1.515 Blitz cans, and lot 2, $1.366; Paraffine Cos.; San Francisco, lot 2, $2.314; A. C. Horn & Co., New York, lots 1 and 2, $1.28 and R. M. Hollingshead Corp., Camden, N. J., lot 1, $1.10 and 2, $1.04.

Treasury Disinfectant Bids

The following bids were received on 2,585 gallons of liquid disinfectant in a recent opening for miscellaneous supplies by the Treasury Department, Procurement division, Washington, D. C.: R. M. Hollingshead Corp., Camden, N. J., 73 cents per gallon; Gerson-Stewart Corp., Cleveland, 65 Cents; West Disinfecting Co., Long Island City, N. Y., $1.24; James Huggins & Son, Malden, Mass., 56 cents and Koppers Co., White Tar department, Kearny, N. J., 84 cents.

P. O. Soap Powder Bid

Unity Sanitary Supply Co., New York, submitted the only bid—10 cents a pound—on 24,900 pounds of soap powder in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C.

Navy Wax Bids

The following bids were received on 90,000 pints of general use wax and 32,500 gallons of general use wax in a recent opening for miscellaneous supplies by the Navy Department, Bureau of Supplies and Accounts, Washington, D. C.: O'Cedar Corp., Chicago, item 10, 20 cents; 11, $1.20; Oil Specialties & Refining Co., Brooklyn, item 10, 13.8 cents, 11, 76.5 cents and R. M. Hollingshead Corp., Camden, N. J., item 10, 14 cents, 11, 54 cents.

VA Tooth Polish Bids

In a recent opening for miscellaneous supplies by the Veterans Administration, Procurement division, Washington, D. C., the following bids were received on 300 sticks of compound polish for dentures: Aurora Dental Specialties Co., Chicago, $90 and Buffalo Dental Manufacturing Co., Buffalo, N. Y., $108.

Easton To Produce HETP

Hexaethyl tetraphosphate (HETP) an insecticide particularly effective against aphids and spider-mites, is now being produced in semi-plant scale quantities by Easton Chemicals, Inc., Los Angeles. Prices and further technical information will be furnished by the company on request. Easton Chemicals also has available for resale or repackaging substantial quantities of "Bromofume 10" and "Bromofume 20." These products are soil fumigants containing respectively 10% and 20% of ethylene dibromide, and are effective in the control of wireworms and nematodes.

CHICAGO CHEMICAL SHOW

(*From Page 55*)

soaps, among other uses. Synthetic detergents were shown by Oronite Chemical Co., San Francisco, Calif., and the field of water conditioning chemicals was represented by Joliet Chemicals, Ltd., Joliet, Ill., the Permutit Co., New York, American Cyanamid and Chemical Corp., and others.

Magnus, Mabee & Reynard, Inc., New York, had an extensive exhibit of their essential oils, balsams, aromatic chemicals and oleorosins.

Sponsor of the exposition was the Chicago section of the American Chemical Society, with Herbert E. Robinson of Swift Co., as chairman.

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RAW MATERIAL MARKETS

As of Oct. 3, 1946

DOMESTIC production of fats and oils in the next 12 months will be about the same or slightly less than the amount produced in the year ended Sept. 30, 1946, according to summaries issued recently by the U. S. Department of Agriculture and the U. S. Department of Commerce.

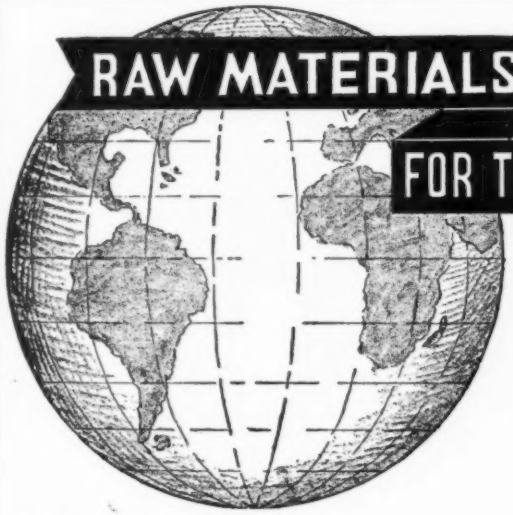
World output of fats and oils, however, is not expected to reach prewar levels for the next two or three years depending upon whether you rely on the estimate of the Department of Agriculture or the Department of Commerce.

Current stringencies should be somewhat improved during the coming year since United States' imports of fats and oils are likely to increase in 1947, according to Department of Agriculture estimates, while exports are expected to be smaller than in 1946. The reduction in exports from the U. S. comes about largely as a result of reduced oil and fat production and stocks in the United States. Factory and warehouse stocks of fats and oils in the United States on Oct. 1, 1946 were said to be about 300 to 400 million pounds smaller than the 1,655 million pounds on hand Oct. 1, 1945. Current stocks, incidentally, are at the lowest level since 1926, the Department of Commerce estimates. The 1945-46 domestic production of fats and oils amounted to about 8.8 billion pounds, some three per cent greater than the expected 1946-47 output.

Demand will continue at a high level well into 1947, the Department of Agriculture predicts, as a result of record high peacetime levels of industrial activity and consumer income. The Department further points out: "Until mid-1947, prices of fats and oils probably will be at ceiling levels, or higher if ceilings are removed. Prices after mid-1947 will be materially affected by changes in business investment and consumer incomes. A marked recession in general business lines, if it occurs, probably would be accompanied by declines in prices of fats and oils despite the apparent scarcity of supplies."

The world output of fats and oils will be retarded in reaching prewar levels by a number of factors, a recent report of the Department of Commerce states. These include: political unrest in the Far East; limitation of whale oil production and larger than

RAW MATERIALS FOR THE SOAP INDUSTRY FROM ALL PARTS OF THE WORLD



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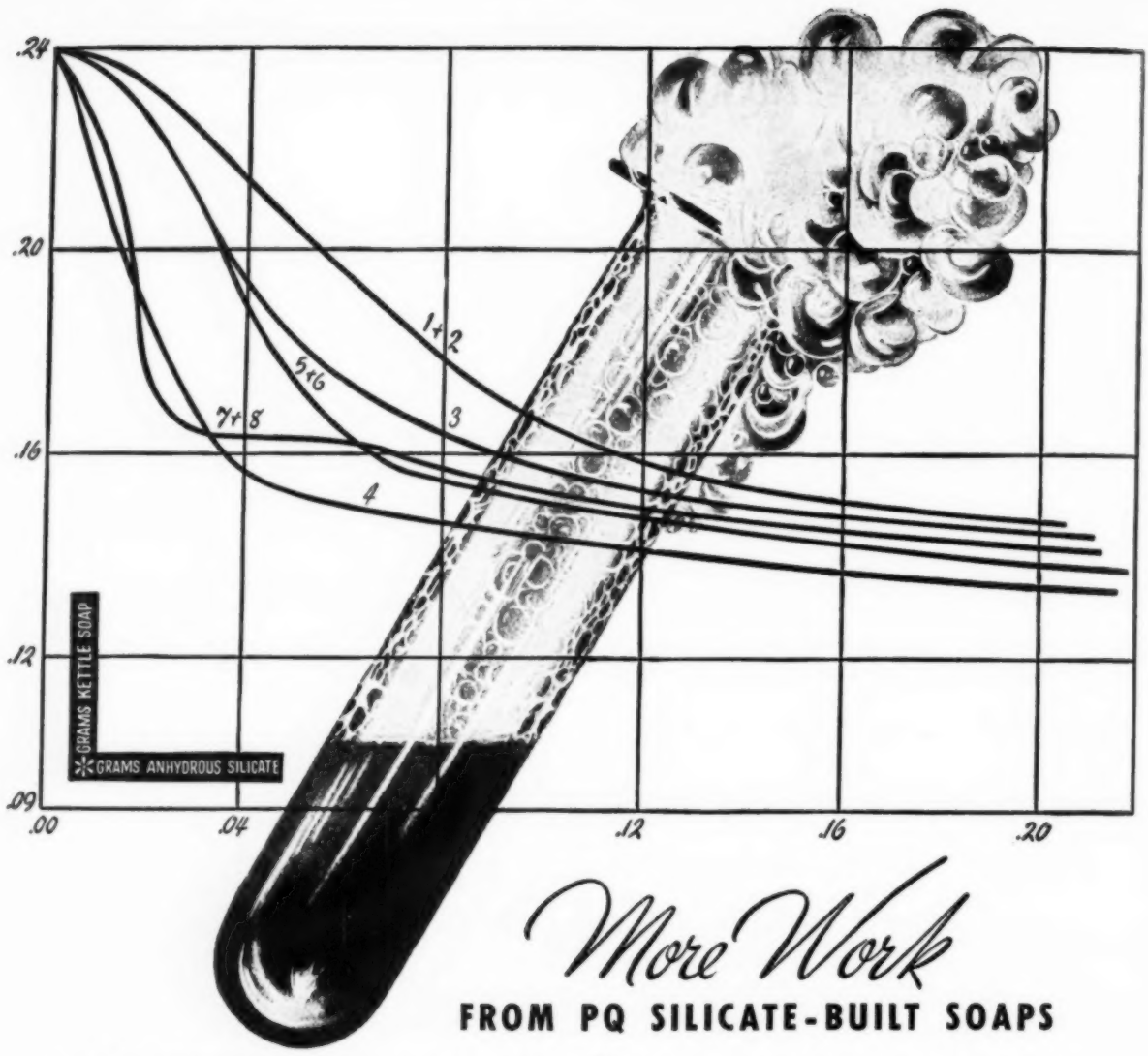

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First, in your own manufacture you save fatty acids by using a higher percentage of silicate of soda. With low titre soaps especially, the increased amount of PQ Silicate improves the body and firmness.

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May we share with you the results of our research work that may solve one of your current problems?

* Minimum commercial kettle soap and silicate (anhydrous) to form permanent suds in 100 ml. hard water (300 parts per million $CaCO_3$ equivalent) at 48.8°C. (120°F.)

1. S Brand ($1Na_2O:3.90SiO_2$)
2. SS-65-Pwd. ($1Na_2O:3.30SiO_2$)
3. K Brand ($1Na_2O:2.90SiO_2$)
4. U Brand ($1Na_2O:2.40SiO_2$)
5. C Brand ($1Na_2O:2.0SiO_2$)
6. B Brand ($1Na_2O:1.6SiO_2$)
7. Metso ($1Na_2O:1SiO_2$)
8. Metso 99 ($1Na_2O:0.75SiO_2$)

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PQ SILICATES OF SODA

normal consumption of domestic production in areas producing oils for export. Years may be required to restore normal production of Manchurian soybeans and Sumatran palm oil, the Commerce Department report declares. It adds: "Whale oil production in the Antarctic has been limited to about one-half of the 1938 level by an international agreement to conserve whale numbers." The number of whale oil producing factory-ships will be increased from 9 ships in 1945-46 to 20 in 1946-47. Whale oil production will be raised to about 600 million tons in the coming year, as against 300 million tons produced in 1945-46. Under an international agreement whale oil production is limited to about 60 per cent of the pre-war level of a billion pounds.

Expansion of sunflower seed production in Argentina, however, is expected to continue, and the output of lard and soybeans in the U. S. probably will remain above the 1935-39 level for some time. Also, several countries may subsidize domestic production of fats and oils in order to reduce import needs.

"Restoration, to the 1935-39 level," continues the Commerce Department report," of the quantity of fats and oils available for international trade likewise will require some years because several producing areas, such as India, may consume a larger proportion of domestic output. On the other hand, the import demand of some countries may be restricted by lack of purchasing power.

"Total exports of fats, oils and oilseeds from principal producing countries in terms of oil or fat equivalent are estimated for 1946 at 2,990,000 short tons, compared with the 1935-39 average of 6,511,000 short tons. The world's import requirements for fats and oils in 1946, however, are about double the supply for export."

In its summary of the fat and oil outlook, the Department of Agriculture points out that export supplies of copra in the Philippines and the outer islands of the East Indies, whale oil in the Antarctic, and linseed oil in the Argentine are likely to increase materially in 1947.

The essential oil industry was subjected to a new headache during the past month in the form of truck and maritime strikes. With the settlement of these strikes, however, and the increase in supplies of perfuming materials coming into the U. S. prices reacted with a drop on many oils. Among those revised downward were: patchouli oil from its previous peak price; bergamot, which established a new low level since the resumption of imports from abroad and anethol and anise oils.

—— ♦ ——

Routh Heads Alkali Group

The election of E. E. Routh, vice president of Mathieson Alkali Works, Inc., New York, as chairman of the industry advisory committee for the chlorine-alkalies industry was reported recently by the OPA. The committee, which held its initial meeting Sept. 23d in Washington, has been appointed to advise OPA on price ceilings and decontrol for chlorine, caustic, soda, and soda ash. Producers of chlorine, caustic soda and soda ash were recently granted a 5% increase in ceilings by OPA. This increase may be passed on by resellers.

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SYNTHETIC DETERGENT

(Alkyl Aryl Sulphonate)

(Low Alkalinity—High Percentage Active Ingredient)

Specific Gravity—.1 (Approximately 10 times as bulky as soda ash.)

Supply Not Affected by Government Order Restricting Fat Use

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PRODUCTION SECTION

German Soap Substitutes

DURING the war, much of the synthetic fatty acids, glycerides and fatty alcohols produced in Germany were synthesized by the air oxidation of "gatsch" from the Fischer-Tropsch process, according to information taken from the final report No. 86 of the British Intelligence Office published by H. M. Stationery Office. Although four factories, capable of dealing with 93,000 tons of raw material per year were erected, it is understood that the Deutsche Fettsaure Werke with a capacity for 40,000 tons per year is the only factory which operated with complete success on a commercial basis and was concerned with the manufacture of synthetic fats and oils.

A figure of 600,000 tons a year was given as the total output of the eight Fischer-Tropsch plants in Germany.

If the whole of the gatsch (approximately 30 per cent) from this production were diverted to the use of synthetic glycerides it may be calculated, on the basis that the yield of fatty acids would be 80 per cent and that 55-60 per cent of these acids would be suitable for synthetic glyceride manufacture, that the potential supply of fatty acids for edible purposes would be about 83,000 tons per year. It is difficult to give an accurate estimate of the cost of synthetic glycerides as compared with that of natural products but it would appear that in Germany before the war they were on approximately the same price level. Only low-grade natural products are being used in Germany as the source of material for soap-making and for this purpose synthetic fatty acids are probably considerably more expensive than the natural products. In 1938 the fat recovered from carcasses and slaughter-house waste by the "Fauth" and other similar processes was valued at approximately 33 marks per 100 kilos whilst the cost given for synthetic acids was 70 marks per 100 kilos.

The O.X.O. process for the manufacture, from Fischer-Tropsch olefins, of fatty alcohols which are ultimately sulfated to give detergents is an extremely interesting development, especially in view of the fact that the cost of the alcohols is not a great deal more than that of the synthetic acids (80-90 marks per 100 kilos as compared with 70 marks per 100 kilos. Although up to the present the alcohols have only been made on a 1,000 tons a year scale in pilot plant, a commercial plant capable of producing 10,000 tons a year is practically ready for operation at Ruhr Chemie; by making the process a continuous one this could probably be increased to 15,000 tons a year.

Ruhr Chemie A.-G.

This firm manufactures fatty alcohols by treating olefin products obtained from the Fischer-Tropsch process with carbon monoxide and hydrogen under high pressure. The main portion of the alcohols obtained are sulfated to obtain non-soap detergents. Fatty acids can be made from the alcohols by a further oxidation process, but as the value of the alcohols is much higher than that of the acids this would not be an economical proposition. The process is not therefore likely to be of much interest to the food industry. Fatty acids for the production of synthetic glycerides are made by the direct oxidation of gatsch from the Fischer-Tropsch process by air.

Ruhr Chemie A.-G. and Henkels each have shares in the O.X.O. process. The general scheme is that the olefins used in the process would be produced by Ruhr Chemie in an adjoining plant, the alcohols would be prepared by the O.X.O. G.m.b.H., and the sulfation carried out by Henkel & Cie.

The pilot plant used in developing the O.X.O. plant, which is now partly destroyed, produced 1,000 tons of alcohol per year; the production plant, the erection of which is not quite complete, will be capable of producing 10,000 tons per year, or if it is made continuous by changing the construction of the converters, 15,000 tons per year.

The main alcohols made by the O.X.O. process have chain lengths ranging from C_{11} to C_{13}. As the unsaturated bond of the olefins may be in various positions in the hydrocarbon chain it seems likely that they will contain branch chain alcohols which may not be as good as straight chain primary alcohols for the manufacture of sulfated detergents. Preliminary tests on a small sample of sulfated detergent obtained from Ruhr Chemie indicate, however, that it is likely to prove a satisfactory product. A proportion of lower alcohols are produced in the process and these are used for other purposes, i.e., in plasticizers.

In peace time the O.X.O. plant would cost 9 million marks—it would require about 100 men for its opera-

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So versatile is the S & S "G-4" Gross Weight Filler that every year about this time tons of insecticides, such as Arsenate of Lead, Paris Green, Bordeaux Mixture and soap powders are quickly and accurately fed into big bags and little bags and all sorts of containers by the driving auger feeds of hundreds of S & S "G-4" Machines.

Of course, these machines would just as readily deal out carefully weighed portions of coffee, or sugar, or flour or any other powdered chemical or drug. Their patented gross weight scales easily handle bags up to 18" in height, holding from 8 ozs. to 6 lbs. of material. And, regardless of the material, there is seldom a deviation in weight of over ½ oz. in 5 lbs. And that spells savings to the manufacturer who is used to paying regularly for the waste of over-filling.

The gross weight scale responsible for this uncanny accuracy is inclosed and fully protected, but easily adjusted and fool-proof. Spillage is reduced to a minimum by the auger feed. Speed, another essential factor, is 5 to 10 units per minute, depending upon size.

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The S & S "G-4" Filler is only one of many S & S Fillers carefully engineered for the utmost in filling efficiency, and time-tried in every corner of the world. For economy and success, send your filling problems to S & S.

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tion. It is the only commercial plant of its kind in Germany.

Raw Materials

The raw materials used in the O.X.O. process are olefins obtained directly or indirectly by cracking from the Fischer-Tropsch process. The Fischer-Tropsch fraction which is cracked to obtain olefins is the paraffin gatsch fraction which includes gatsch and higher melting point waxes. 50 per cent of the Fischer-Tropsch products are suitable for the O.X.O. process or a little more when high paraffin fractions are included.

The Fischer-Tropsch process at Ruhr Chemie is operated with a cobalt catalyst at 195°C.—the plant is built to stand 15 atmos. pressure. The process employing an iron catalyst would give a higher yield of olefins but it requires a higher temperature (230°C.) and pressure (50 atmos.). Ruhr Chemie are experimenting on the direct production of a high percentage of olefins in the Fischer-Tropsch process so as to avoid the necessity for cracking. They operate three processes:

(1) At atmospheric pressure which gives about 10 per cent olefins directly;

(2) At 10 atmospheres pressure which gives, say, 10-20 per cent olefins; and

(3) A recirculating process which gives about 50 per cent olefins.

The recirculating process is operated at 10 atmospheres and to increase the yield of olefins the ratio of hydrogen to CO present is cut down to 1/1. Difficulty was experienced due to the formation of carbon on the cobalt catalyst but this was largely overcome by increasing the speed of the gas stream. The outgoing gases are reused in the low pressure plant. Before they pass the O.X.O. plant, the olefins obtained from the Fischer-Tropsch process are distilled to obtain three fractions of the following chain lengths: C_{11}-C_{13}; C_{13}-C_{16}; and C_{16}-C_{18}.

This is carried out in distillation towers which are 45 meters high and 2.5 meters diameter. Each still contains 50 slotted plates. One tower is worked at normal pressure and the other at a vacuum of 60 m.m. pressure. These fractions go to different converters but they may be mixed after conversion to alcohols.

Plant and Process

The O.X.O plant consists of 16 reactors (estimated to be about 30 ft. high and to have an external diameter of 1 ft. 6 in.) of 720 to 840 liters capacity. The reactors are fitted with cooling coils (as the reaction heat is very high) and stirring gear. They are made of steel of low chromium content and the reaction is carried out at 200 atmospheres of pressure and 180° C. At higher temperatures polymerization occurs. The cobalt, manganese, thorium catalyst is added to the olefins in the form of a fine powder. Any volatile materials distilling during the operation are recovered in a condenser at the top of the tower. The water gas freed from impurities, and employed as the source of CO_2, is compressed to about 200 atmospheres by compressors which are capable of giving 300 atmospheres pressure. The hydrogen which is used in the ratio of one part to two of water gas is obtained from the fertilizer plant, where a process for the fixation of atmospheric nitrogen is operated. The actual time of reaction is 20-30 minutes and the whole operation, including filling and emptying, takes about one hour. The alcohols formed by the reaction are separated from the paraffins in stills working at 3 m.m. pressure; they contain small amounts of paraffins but not sufficient to affect the emulsifying and detergent properties of the sulfated alcohols. Samples of C_{13}, C_{17} and C_{18} alcohols, which were very satisfactory as regards color, and the C_{17} and C_{18} alcohols were comparatively free from odor. The odor of the C_{13} alcohols was similar to that of synthetic fatty acids but was not so pronounced as in the case of the acids.

The over-all capacity of the eight Fischer-Tropsch plants in Germany is 600,000 tons per year.

The firms which operated the process were:

1) Gewerkschaft Rheinpreuzen, Mors.
2) Ruhr Chemie, Oberhausen Holten.
3) Krupp Treibstoff, Gelsenkkrchen.
4) Gewerkschaft Victor, Rauzel.
5) Hursch Benzene, Dortmund.
6) Essener Steinkohle, Kamen.
7) Wintershall, Lutzendorf Krefeld.
8) Braunkhule und Benzene, Swartzheide.

The cost of the olefins produced by Ruhr Chemie was stated to be 35-40 pfgs. per kilo. They are sold to O.X.O. G.m.b.H. at 45 pfgs. per kilo. The cost of the finished alcohols is 80-90 pfgs. per kilo. *Soap, Perfumery & Cosmetics*, Vol. XIX No. 8 (August, 1946).

Garbage Grease for Soap

Dehydrated garbage is producing satisfactory commercial yields of grease suitable for soap making, the American Chemical Society was told at its 110th meeting in Chicago last month in a paper presented to the Society's Water, Sewage and Sanitation division by W. A. Bush of California Flaxseed Products Co. Calculated on various Los Angeles samples, he reported, the dry solids in which lie the potential value of garbage, contain from 14.2 to 23 per cent of protein, 33.8 to 41 per cent of carbohydrate, 17.1 to 22 per cent of fat, 8.45 to 12 per cent of fiber and 11.6 to 17.6 per cent of ash.

Experiments were also made with garbage, freshly dehydrated daily and before spoilage could occur, in a number of institutions where large numbers of people are fed, with especially successful results. The grease yield, he said, was suitable for soap making or for fat-splitting operations, and the oil-cake meal was a useful component of mixed cattle feeds.

"Grease produced from spoiled garbage was poorer in quality than that refined from freshly dried garbage," he said. "It was more rancid and would make a softer soap. Its color was darker and more difficult to improve. Furthermore, the yield was only about two-thirds as much as from unspoiled garbage."

T.R.I. Meets in November

The annual research meeting of the Textile Research Institute will be held in New York on Friday, November 8, 1946, at the Waldorf-Astoria Hotel, it was recently announced by the Institute. "Production Progress Through Textile Research" is the theme selected for the day's program.

THIN, UNIFORM

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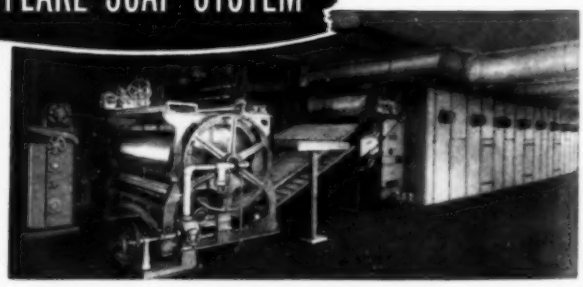
The thin, uniformly dried flakes produced by the Proctor Automatic Flake Soap System are ideal for making toilet cakes; giving better and quicker results in milling and plodding. Then, too, the absence of under or over-dried spots in these flakes keeps the cake free from hard particles that tend to roughen the surface. Uniformly dried flakes also assure freedom from white spots that mar the color of the finished cake. Every factor affecting the production of these flakes in the Proctor system is accurately controlled to assure consistently high quality flakes. Such assurance of flake excellence is a most important consideration to the producer of fine toilet cakes—and is one reason why the Proctor system has been selected by many leading manufacturers of popular brands of toilet soap. If you are engaged in the manufacture of toilet cakes—you'll find it well worth your while to investigate the details of this modern flake soap system. Write today.

PROCTOR *Automatic* FLAKE SOAP SYSTEM



Typical installation of the Proctor Automatic Flake Soap System shows chilling roll, where hot liquid soap, received from the crutcher is solidified and cut into ribbons by precision set needles; special carrying-in conveyor by which ribbons are conveyed to 8 unit, three conveyor dryer. Output in installation pictured ranges from 3400 to 4800 pounds (commercial dry weight) per hour. Drying time is seven minutes.

PROCTOR & SCHWARTZ, INC. *P & S* PHILADELPHIA • 20 • PA •

Potash Soap Chemurgy

Many thousands of tons of seeds are a waste product of the fruit processing industry. Practically all of these seeds could be pressed or extracted without segregation of the various types, and the oil out-turn if marketed under the generic term of "fruit seed oil" would be a bland product readily saleable to the potash soap industry.

This point, made by Dudley J. Bachrach, Clifton Chemical Co., New York, in an article in the July *Chemurgic Digest* is interesting and timely in view of the current shortages of all types of soap-making oils. The article entitled, "The Potash Soap Manufacturer as a Chemurgic Influence," also points out how the farmers' and processors' revenues could be increased by putting such waste and by-products to use.

Mr. Bachrach explains that the potash soaper uses few animal fats but, in addition to the more common vegetable oils, such as cottonseed, corn, and soybean, he finds a use for the bland oils from almost any type of nut, seed, or kernel. Age, high color, and free fatty acid content mean little to him.

Mr. Bachrach observes that if cohune, babassu, and murumura nuts could be grown in the United States to provide a domestic source of laurates and myristates, valuable as high sudsing soap ingredients, they would find a ready market among potash soapers. Tall oil, a by-product of the wood processing industry, was also suggested as a valuable raw material for the potash soap industry. It produces a very unguent potash soap.

Mr. Bachrach's article traces the history and growth of the potash soap industry, explains what potash soaps are, and the cleaning purposes they serve. Emphasis is placed on the fact that many of the waste products of agriculture are a source of raw materials for the making of potash soaps and in this way the industry acts as a chemurgic influence.

Cleaning Drums

The interiors of drums, condensers, and similar structures are treated to remove oil or grease and adherent solids by applying the spray from a steam-pressure sprayer to which a volatile grease solvent such as trichloroethylene, is supplied. The proportion of solvent to steam is so adjusted that a mixture of solvent vapor and steam in azeotropic proportions is produced. R. Cosway and Imperial Chem. Industries Ltd. British Patent No. 560,865.

Sulfating Oils

Variations in the procedure for sulfating oils—as in producing Turkey red oil, may drastically alter the nature of the finished oil. Among the factors are (1) raw materials, the acid and raw oil must be strictly controlled to ensure a standard product; (2) variation in temperature of sulfation, a difference of 10°C. greatly alters a product; (3) rate of addition of acid; (4) time taken for the process to reach equilibrium; and (5) length of time before washing.

During sulfation, the sulfuric acid combines with hydroxyl groups, and hydrolyzes glycerides to form free fatty acids and glycerine. Sulfuric acid also combines at double bonds in the free fatty acids. The latter, when insoluble in water, must be neutralized subsequently to form soaps. D. Burton. *Chem. Trade J.* & *Chem. Engineer* **118**, 614 (1946).

Active Chlorine Compounds

Certain inorganic active chlorine compounds are widely used in sterilization, bleaching, and chemical syntheses. The Army has employed them for shrinkproofing of socks. The higher cost of organic active chlorine compounds will limit their use except as special antiseptic and sterilizing agents. A. G. Chemicek. *Textile Research J.* **16**, 219-25.

Adsorptive Power

Aniline and acetic acid were adsorbed from a benzene solution with an activated commercial decolorizing agent. The amount of material adsorbed at constant concentration per gram of earth is greater for smaller amounts of earth than for larger, and ranged from 0.25 to 1.0 gram per 100 cc. of solution. A. J. van Duuren. *Rec. trav. chim.* **64**, 303-4.

Soap in Flame Throwers

The thickening agent employed by the Chemical Warfare Service for the preparation of gelled gasoline fuels used as filling in flame throwers and for incendiary bombs, is an aluminum soap derived from a combination of acids of the types such as lauric acid and naphthenic or oleic acid. A description is given of early work on the problem. L. F. Fieser, G. C. Harris, E. B. Hershberg, M. Morgana, F. C. Novello, and S. T. Putman. *Ind. Eng. Chem.* **38**, 768-73 (1946).

Surface-active Agents

Simple determinations of wetting time, surface and interfacial tension, and foaming power, are not usually directly applicable to industrial use of surface-active agents because of the increased number of components or the complicated and dynamic conditions of practical use. The bearing of physical and chemical properties of these agents on industrial applications is briefly discussed. R. R. Ackley. *Ann. N. Y. Acad. Sci.* **46**, 511-29 (1946).

Wool Lubricant

A newly-developed wool lubricant has a viscosity of about 400 seconds Saybolt Universal at 100°F., is soluble in water, and has surface-active properties which make it self-scouring. Mill practice has proved the effectiveness of the agent. Mechanical processing steps are facilitated from application in the picker through carding and spinning of the yarn. The resultant yarn is invariably stronger than yarns produced with conventional lubricants. In most cases the tensile strength is increased by about 20 per cent.

Soap has been used for a long time as the fulling medium. However, the new lubricant makes an excellent fulling agent with the addition of a small amount of soda ash. By running the fabrics in a low bath of plain warm water in the dolly washer and then rinsing, the lubricant is washed out to a low residual oil content. No scouring aid is required. A. Moscowitz. *Am. Dyestuff Reporter* **35**, 310-11 (1946).

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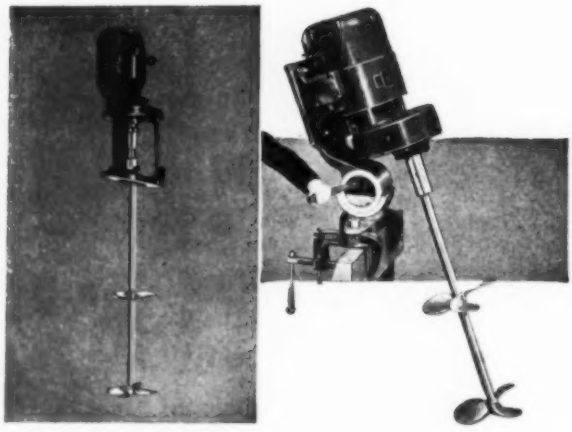
For every liquid processing job



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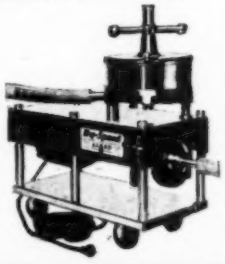

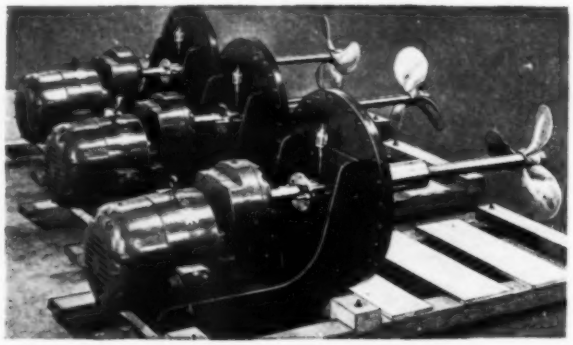

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Our Newly Enlarged Factory and Foundry

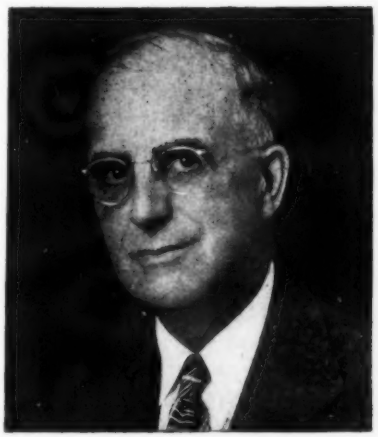
PRODUCTION Clinic

By DR. E. G. THOMSSEN, PH.D.

MODERNIZATION of production facilities is of course far more important than maintaining pretentious offices, although the average visitor to an industrial plant would scarcely get this impression. It has been our privilege through the years to visit many industrial processing plants and the observation too often is made that attractive up-to-date offices fail to reflect the same conditions in the plant. Very often the exact opposite is true. Manufacturers realize the importance of attractive offices and strive to make them well equipped, orderly, and impressive.

It would be logical to expect that a company sensitive to the importance of maintaining a modern office, much of which is overhead expense, would be even more solicitous of conditions in the plant, where the products of a business are really manufactured. Far too often, however, the plant gets "step child" treatment. There are many cases where an expenditure for plant improvements equal to that spent freely on office decorations would pay far greater dividends.

It is not wise to judge the reliability of a company by the appearance of its offices. There comes to mind the head of a privately owned company (that has since failed) who prided himself on his company's offices which were very modern and cost a lot to maintain. The plant, which produced chemical specialties, was a group of ramshackle buildings, poorly arranged, unsuitable for the purpose, and badly in need of repair. Appeals



by the production men for a new plant were turned down as the owner took the attitude that he could not turn factory buildings into quick assets. He did not seem to realize that they were a daily asset and were, in fact, the very heart of his entire business. The result was that competitors were able to outstrip him in costs and workmanship so that his business ran down hill.

Very few smaller companies have a constructive plan for growth that puts plant expansion and improvement in its proper place. One of the principles of good business administration is to plan ahead, for even though such plans may not materialize entirely and may need to be altered, a better business course can be pursued when a definite goal has been set up. Recent observations of the smaller soap and sanitary chemical plants about the country forces the comment that these smaller plants are more disorderly and dirty than are the bigger ones. It is hardly good business for people who depend upon cleanliness and sanitation on the part of others to set such a poor example themselves. The reasons for this situation are that operators starting in a small way, finding their business growing rapidly with many new items requiring additional production and storage space, and labor becoming scarcer, have had so many unforeseen business problems requiring their immediate attention that they have shoved the problem of plant tidiness into the background. The weak point, nevertheless, is that most operators made no effort to plan to meet such conditions.

Quite recently a marked contrast to this situation was observed. In visiting a small plant where proper plans had been set up and carried out, it was found that the factory was orderly and that the present problem of raw material shortages had been more easily circumvented because the extra storage space provided made it possible to buy in larger quantities. We were told by the operator that although he was deeply indebted to the bank, the new business he was able to take on because of his planning ahead would provide for the paying off of his debt ahead of schedule. The modernization of his office would have to take its place behind plant improvement in the plans for his next expansion program.

Planning ahead will pay small business men many dividends. It provides them with a goal and helps them grow toward that goal in a more comfortable manner. Even during these confusing and irritating times, the executive would do well to lay plans for plant expansion that can be fulfilled when more normal conditions once again prevail.

An Unusual Gum

Recently we faced a problem in compounding a product for use as an insecticide. It consisted of solids and liquids in the form of a paste. As is so often the case in such a combination, separation or leaking of the liquid occurred after the product was tubed or packaged in a jar. We tried to correct this with the usual gums like Tragacanth, Karaya and Irish moss ex-

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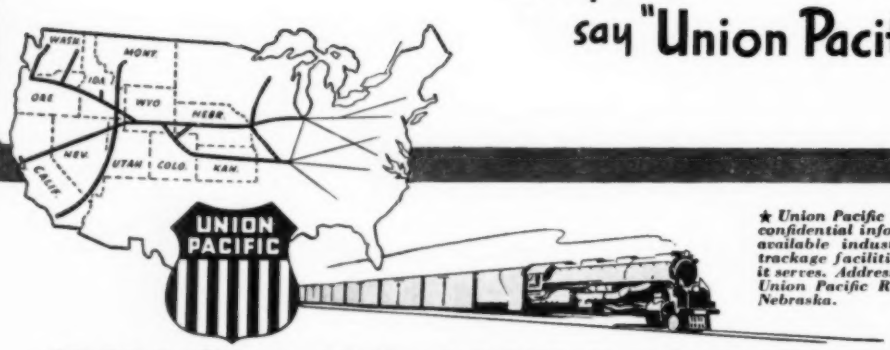


★ *Union Pacific will gladly furnish confidential information regarding available industrial sites having trackage facilities in the territory it serves. Address Industrial Dept., Union Pacific Railroad, Omaha 2, Nebraska.*

UNION PACIFIC RAILROAD

The Strategic Middle Route

IN WIND, RAIN, SNOW OR HAIL • YOUR FREIGHT GETS THERE BY RAIL!

tract but found these inadequate. Our attention was drawn to a new gum called Tra-Gum handled by Chemical Services, 2007 Harris Trust Building, Chicago 3, Illinois. This product solved our difficulty quickly and thoroughly.

Tra-Gum possesses unusual colloidal properties. A two percent aqueous dispersion remains highly viscous without setting to a gel. It possesses the properties of a stabilizer and coagulent for pastes, emulsions and dispersions. Solids in liquids remain in suspension in 2 per cent Tra-Gum solution. Dilute alkalis and acids do not affect its viscous properties. The product is edible, has considerable more thickening power than other gums, is neutral in reaction, forms a thick gel with borax and produces a flexible transparent film when the gel dries. These and other properties recommend it for use in products in the insecticide and sanitary chemical field. Samples may be had by writing the above company.

Spray Nozzles

Spray nozzles find many uses in industry. A few of these are in the aeration and purification of water supplies, cooling circulating water, atomizing various liquids in chemical manufacture, fire protection, making soap powders, dust settling, humidification and air conditioning. To those who are iterested in investigating spray nozzles, the catalog issued by Spray Engineering Company, Somerville, Mass., describing their line of "Spraco Nozzles for Industrial Purposes" will be found very helpful. It describes in detail the numerous types made by this company that are especially designed for the various desired results.

From our Advertising Pages

To keep up to date one must read advertisements. Personnel, particularly on the production end of a business, who do not do so are very apt to miss valuable information regarding new items, new machines or new processes. As we perused a current issue of *Soap*, a number of chemicals particularly arrested our attention. Emery Industries, Cincinnati, announce two new saponifiers: "Neo Kontakt Special" and "Liquid Kontakt." Either of these reagents split high grade fats to a high percentage resulting in light colored fatty acids of low unsaponifiable content. Other advantages are low ash in the glycerine, faster saponification time, lower splitting costs, high sulfonic content of the reagent, and satisfactory hydrolysis of all fats. Fat splitting by the Twitchell Process fits into the soap and allied industries especially where expensive installations are not warranted for the cleavage of fats and oils.

The announcement of Westvaco Chlorine Products Corporation, New York, that tetrapotassium pyrophosphate is available in commercial quantities should interest the makers of liquid soaps. This company informs the trade that they are making a high quality product that is designed for such soaps where quality is of primary consideration. TPPP increases the emulsifying property of soaps, prevents the formation of lime soaps in hard water and clarifies liquid soaps and shampoos.

Another product recommended as an addition for improvement of certain properties of soaps is lecithin offered by Robinson Wagner Company, New York. "Rowag" lecithin is pure, light in color, free from fishy odor and crystal clear in appearance. It is available as a light liquid or in a heavier consistency. The addition of lecithin to soaps lowers their surface tension and improves lathering properties. When 1 per cent to 2 per cent is added it imparts a soft, velvety texture. It is said this product may be added to liquid soaps without danger of discoloration.

Thank You!

Recently one of the prominent soapers commented on this column to us. He said he could kick us for some of the comments that are offered, were it not for the "kick" he got out of many of the statements that were made. We appreciate the compliment. Suggestions and criticisms are always in order, as it is our aim to aid production men. Write us your opinions, be they good or bad, as they help us in our effort.

Two New Spot Test Items

Cargille Scientific, Inc. New York, have announced a new type of plate for spot testing analyses using mirrors instead of the conventional test plate cavities as a reaction site. Precipitates show up that are only one-fortieth the minimum quantity visible on the conventional plate. The company has also developed a reagent granule which is porous, inert, and similar to fritted glass. Throughout the granule is dispersed a pure, dry, chemical reagent soluble in the liquid to be tested. Advantages claimed for the granules are convenience in handling, ready availability of the reagent, instant solubility, complete stability until used, and purity of reagent.

Leaflet on Laundry DDT

A four-page color leaflet describing "Erusto DDT Emulsion" for use in laundry and dry cleaning plants has been published by the Pennsylvania Salt Manufacturing Company, Philadelphia. The leaflet describes "Erusto DDT Emulsion" and its effect on insects, gives directions for its use, discusses sprayers and surfaces on which it may be used and duration of the residual killing power. Copies may be obtained by writing to the company at 1000 Widener Building, Philadelphia 7, Penn.

Chem. Consultants Directory

The Association of Consulting Chemists and Chemical Engineers, Inc., New York, have announced the publication of the tenth, 1946, edition of their classified directory. The directory is available without charge to applicants giving full name, business connection and source of reference.

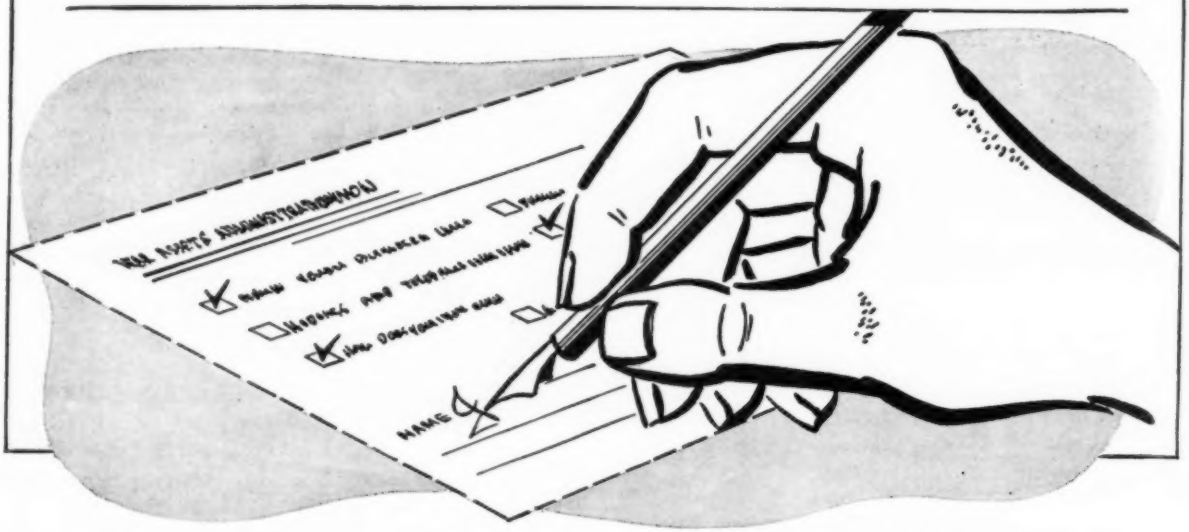
New Magazine on Research

A new magazine, Progress Thru Research, published by the Research Laboratories of General Mills, Inc., will be in the mails about October 1st and will include in its first issue an article on industrial uses of lecithin.

Ketch-All Screen Catalog

A. M. Products Company, Detroit, has issued a new catalog covering their "Ketch-All" screens for urinals and sand-urns. Copies may be obtained by writing directly to the company.

..GOVERNMENT-OWNED SURPLUS PROPERTY..



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Remember, there are hundreds of items in the vast stock pile of War Surplus industrial chemicals, many *at below-market prices!* Among them you may find the chemicals *you* want. All items are ready for quick sale and you may arrange convenient credit terms. Your nearest WAA Regional Office is listed below. Write today—or use the coupon below.

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- Dimethylaniline
- Coal-tar
- Borax and boric acid
- Metal salts, oxide and hydroxides
- Pitches
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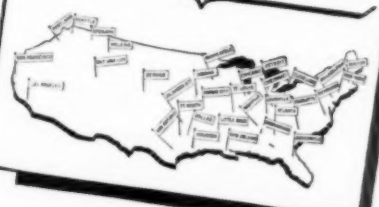
33 REGIONAL OFFICES TO SERVE YOU



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All chemicals are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

Much surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

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GOVERNMENT OWNED SURPLUS

Amine Emulsifiers Booklet

A new booklet issued recently by the chemical division of Armour and Company, Chicago, gives interesting information about their new line of cationic emulsifiers, "Armeens" and "Armacs." The "Armeens" are a family of aliphatic high molecular weight amines running from 6 to 18 carbon atoms in both technical and distilled grades. The "Armacs" are the acetate salts of the "Armeen" family. These emulsifiers have a pH of around 7 in emulsion form, are quite stable at a relatively low acid pH but are unstable in alkaline environments. "Armacs" are claimed to have the property of causing a preferential wetting of certain types of surfaces by the oil phase of an emulsion. The dodecyl member is said to have germicidal properties. The higher molecular weight "Armacs" are claimed to be the best emulsifiers of the family. When compounding an emulsion using an "Armeen," a certain percentage of acetic acid is used with the aqueous phase. "The Armeens" and "Armacs" are not well compatible with salts of di or polyvalent inorganic acids. Emulsions made with the "Armeen" salts, particularly the shorter chain length ones, are not recommended for cosmetics because they tend to dry the skin. The booklet as well as samples of the emulsifiers are available from the company.

Sanitation Supply Booklets

Two new sanitation supply brochures were recently announced by the Industrial Sanitation Research Foundation, Louisville, sponsored by the Seagram-Calvert production division. The new booklets, "A Modern Supply Room for Industrial Sanitation," and "I. S. R. F. Locker and Washroom," are available without cost and bring to the public fundamental techniques and methods of industrial sanitation.

Cleanliness Books Merge

A new bulletin "Cleanliness Training and Health Education," a merger of two former publications, "Cleanliness Training" and "Cleanliness and Health," has been developed for the Association of American Soap and Glycerine Producers. It will be sent only on request and the present mailing list on this basis totals about 15,000. The bulletin is institutional and educational in character appealing to school teachers, public health officers, safety directors, industrial physicians and nurses.

Chemical Info Center

All technical men working in the soaps, detergents, fats and oils, and insecticides fields should become familiar with the Chemical and Biological Center recently established by the National Academy of Sciences and National Research Council in Washington. The purpose of this center is to sponsor an active screening program of all organic chemical compounds, both new and old, to determine toxicity, insecticidal and rodenticidal action, insect repellency, and other specific actions. Samples of newly synthesized organic compounds are to be submitted to the center for cataloging and subsequent distribution to selected federal, state, municipal, and non-profit testing laboratories which have facilities for carrying out screening tests. The results of such tests will be filed under a coding system at the center. According to W. R. Kirner, director of the center, the discovery of DDT as an insecticide would not have been delayed seventy years after Zeidler synthesized the compound if such a system had been in effect. Through a method similar to the one set up at the center, "1080" was found to be an important rodenticide. Chemists can cooperate with this program by submitting samples and data to the Chemical and Biological Coordination Center, National Research Council, Washington, D. C.

Toiletries Tax Rejected

At a referendum held in connection with the general election September 10th, the 5% tax on cosmetics and toilet goods approved earlier by the Maine Legislature was defeated by a margin of approximately two to one. The 5% tax, would have been in addition to the 20% federal exise tax, and would have been used to finance a proposed veterans' benefit program.

New Type Extraction Plant

A new type solvent extraction system which is claimed to be capable of increasing the annual oil yield from cottonseed, linseed, castor, and other oil-bearing seeds, nuts, and beans by 20,000 tons, has been developed by the Sherwin-Williams research staff at the company's Cleveland linseed oil mill. The process is reported to extract 98½% of the available oil from vegetable matter used in the production of soaps, salad oils, paints, and other products. A universal extraction plant is said to be available in that one plant can be used interchangeably for the extraction of vegetable oils from over 20 common sources. The system is said to require only two-thirds the plant space needed by other processes. Patent applications are pending covering the processes used in the system and certain features of the equipment employed in carrying out the processes. The first of these new plants is being built in Cleveland.

Three New Erusto Cleaners

Three new products have been added to the "Erusto" line by Pennsylvania Salt Manufacturing Co., Philadelphia. The products are "Erusto" liquid wet cleaning soap, "Erusto" synthetic solvent soap, and "Erusto" filter soap. They are described in a six-page folder which gives information regarding their action and use as cleaners. Copies may be obtained by writing directly to the company.

Chem. Devel. Symposium

The Chemical Market Research Association and the Technical Service Association are jointly sponsoring a symposium to discuss organized commercial chemical development. The symposium will be held at the Hotel Roosevelt, New York, December 12, 1946. The purposes of the meeting are to acquaint the industry with proper methods of introducing new chemicals to industry, to outline the study of chemical markets to justify plant expansions, construction of plants for chemicals never produced commercially, and development of new uses for old products.

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Interchangeable filling stems for any type of liquid or semi-liquid. Interchangeable holding cups for any type of container up to 4⅜" diameter. Fills All-Glass-Shaker-Top ware. Fills from any size storage container up to barrel size. Moving parts completely enclosed in streamlined cabinet. Portable. Plug into nearest electrical outlet. The ideal "stand-by" unit to step up filling operation on any liquid, any container, at any location in your plant . . . and at once! Write for Bulletin B-2.

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PRODUCTS AND PROCESSES

Nongritty Hand Cleanser

A cleansing paste for auto mechanics to remove grease and oil from the hands without subsequent rinsing with water, contains:

	Parts by weight
Soft soap	50
Soda ash	50
Glycerine	50
Agar	2
Psyllium	3
Ammonium hydroxide	25
Javelle water	5
Water	815

The product contains no abrasive but does contain an oxidizing agent for effectiveness. *Drug & Cosmetic* Ind. 59, 121 (1946).

Cleansing Agent

As a soap additive a material which will form a precipitate in use and carry down impurities. Examples are alum, calcium acetate, and magnesium tartrate. These may be mixed with a porous material such as ground wood, infusorial earth, or clay. A. Mandrups Maskinfabrik A. Danish Patent No. 62,868.

Alkaline Detergent

A special alkaline detergent for paper-mill felt washing is sold as "Nu-Nap" by the Cowles Detergent Company of Cleveland. The product is a white, free-flowing, anhydrous material containing 100 per cent of active ingredients. It is effective in hard or soft water and is free rinsing. *Chem. & Met. Eng.* 53, No. 7, 154 (1946).

Washing Process

Fabrics are washed in a series of operations in which a relationship is determined between the amount of soil to be removed and the amount of detergent to be added. This procedure is made possible for each successive washing by determining the value of the suds-forming property in each bath. This can be used to establish the amount of detergent required in the next bath, until the soil on the articles is reduced to a point below a predetermined value. J. W. Chamberlin, to Am. Machine & Metals Inc. Canadian Patent No. 436,059.

Aralkylated Sulfonamides

Useful dispersing and washing agents result from condensation of sulfonamides with aryl chloromethyl compounds. Solubility in water is achieved by the presence of sulfonate or sulfate groups. O. Albrecht. U. S. Patent No. 2,398,990.

Sorbitol Derivatives

A water-soluble surface-active product is prepared by the condensation of one mol of 1-dodecyl thiosorbitol with two mols of alpha-methyl glycoside. P. L. Salzberg and J. H. Werntz, to Canadian Industries Ltd. Canadian Patent No. 435,961.

Fatty Acid Mixtures

The mixed fatty acids of an oil can be separated into groups by low-temperature crystallization of the fatty acids from alcohol, petroleum ether, or acetone. This method is easier and sometimes more accurate than the better known Twitchell method of forming insoluble lead salts. J. L. Boyle. *Manufacturing Chemist* 17, 282-4 (1946).

Textile Bleach

Cellulosic textile materials are bleached with an alkaline solution of sodium chlorite and a hypochlorite. G. P. Vincent, to The Mathieson Alkali Works. Canadian Patent No. 435,996.

Fatty Acid Distillation

Fatty-acid stock containing undesirable components having higher and lower boiling points than the fatty acids, is fractionated at an elevated temperature and reduced pressure to remove the lower-boiling components. The remainder is subjected to distillation to separate the fatty acid at a temperature lower than the highest in the fractionation and at a pressure lower than the lowest pressure. The desirable fatty acids are separated by this means. Lever Brothers & Unilever Ltd. British Patent No. 564,831.

Oxidized Oil Treatment

Fats and oils which have been affected by oxidation are stabilized by first heating them under reduced pressure, or by treating them with reducing agents until the peroxides have been decomposed, and then adding an antioxidant. The peroxides are reduced by washing the fatty material with an aqueous solution of sodium thiosulfate or by dissolving it in chloloform acidified with acetic acid and treating with potassium iodide. Subsequently free iodine, excess potassium iodide, acetic acid, and solvent are removed. National Oil Products Co. British Patent No. 565,565.

Sulfonated Ethers

Naphthol or phenolsulfonic acids or their sodium salts are condensed with aromatic compounds containing a $ClCH_2-$ group to yield the corresponding ether by elimination of hydrogen from the hydroxyl group and chlorine from the $ClCH_2-$ group. C. Granacher, J. Frei, and J. Meyer. U. S. Patent No. 2,399,434.

Sterilizing Instruments

A formula for sterilizing dental instruments is as follows:

Isopropyl alcohol	1000 cc.
Oil of rose geranium	2 cc.
Oil of cinnamon or cassia	4 cc.
Distilled water	780 cc.
Sodium nitrite	4 gms.
Mono or triethanolamine	60 cc.
Solution of formaldehyde U.S.P.	160 cc.

Mix the ingredients in the order given and use without dilution. Frequent contact with the hands should be avoided. *Drug & Cosmetic Ind.* 59, 271 (1946).

Polishing Wax

Polishing wax containing at least 25 per cent of a magnesium, zinc, or aluminum soap such as aluminum stearate. Akt. Junckers Savvaerk. Danish Patent No. 60,378.

By fractional distillation, the common fats and oils used for years by the soap industry can be converted into more efficient, more economical, easier-to-use raw materials. Even fatty materials not by nature suited to the rigid requirements of soap manufacturers can be transformed by fractional distillation.

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No. 2,405,775, Insecticide and Fungicide, patented August 13, 1946 by William E. Bradley, Los Angeles, Calif., assignor to Union Oil Company, of California, Los Angeles. A process for the treatment of areas infested with fungus and insects, which comprises spraying said areas with a material comprising a substantially pure isoparaffinic oil boiling in the range of about 350° F. to about 800° F.

No. 2,406,294, Insecticide, patented August 20, 1946 by James W. Hansen and Carroll C. Cassil, Berkeley, Calif., assignors to California Spray-Chemical Corporation, Richmond, Calif. An insecticidal composition containing as active toxic ingredient cyclopropyl furyl propenone and a carrier therefor.

New Hand Detergent Spec.

A new federal specification, P-D-221a, for "Detergents, Hand; Paste and Powder, for Mechanics' Use," was recently issued to supersede P-D-221, in the Federal Stock Catalog, Washington, D. C. The new specification differs from P-D-221, as listed on P. 195 of the *Blue Book* for 1946, in that a third type of detergent is specified as open for bidding. Type III is a hand scouring powder with vegetable abrasive. This detergent for mechanics' use "shall be a uniform mixture in powder form of clean sawdust or cornmeal, thoroughly saponified soap, and/or active, salt-free synthetic detergents, and pine oil. The detergent shall not contain any mineral abrasives, such as lava, pumice, sand, quartz, etc. Sawdust, if used, shall be of a granular nature and free from splinters. Detailed requirements of type III are: matter volatile at 105°C.—10 per cent; alkaline salts (as sodium carbonate)—0.2 per cent; free alkali (as sodium hydroxide)—0.1 per cent; free acid (as oleic)—0.5 per cent; matter insoluble in water (siliceous matter)—none; matter insoluble in water (sawdust or cornmeal)—62 per cent; rosin—5 per cent; sugar—none; volatile hydrocarbons—5 per cent. All constituents shall be reported on the basis of the sample as received.

SOAP IN HARD WATER

(*From Page* 49)

used as in water of zero grains hardness to produce an initial lather, 10.41 times as much to produce a permanent lather.

At 150 degrees, however, "Type B" required 17.9 times as much to raise an initial lather as at zero grains hardness, 17.19 times as much to produce a permanent lather.

Following are results of tests with "Type B":

EXPRESSED IN OUNCES PER 100 GALLONS

	At 70° F.		*At 150° F.*	
Grains	*Initial Lather*	*Permanent Lather*	*Initial Lather*	*Permanent Lather*
0	8.75	9.84	16.30	17.78
1	12.66	18.27	25.43	26.80
2	23.88	25.96	45.98	50.81
3	35.13	40.75	49.05	56.77
4	47.81	52.00	69.40	82.71
5	57.60	63.15	118.64	133.47
6	63.14	64.00	133.47	142.27
7	64.00	74.50	163.19	171.88
8	80.14	91.35	198.14	208.84
9	91.35	97.04	219.47	240.23
10	97.04	102.50	283.35	305.57

As to the relative amount of soap required to hold a permanent lather, after an initial lather has been raised, it appears this does not constitute a great percentage of the total soap consumed, 3.9 per cent and 4.03 per cent in the case of "Type A" at 70 and 150 degrees, respectively, and 11.5 per cent and 8.7 per cent in the case of "Type B" at 70 and 150 degrees, respectively.

Translating the permanent lather figures for "Type A" into actual use by a family of four in a year's time and combining them with figures compiled by the Michigan State Department of Health based on Professor Foulk's general formula, we get the figures indicated in figure No. 2, which shows that in a year's time a family of four would use $21.53 more soap at 16 cents a pound with water at 30 grains hardness than at zero grains hardness.

As is indicated by figures 3 and 4, representing a portion of the Report of the Water Planning Committee (1934) of the National Resources Board, a great deal of the ground and surface water of the United States is hard, so it may conservatively be estimated that many millions of dollars worth of soap is wasted annually by hard water.

Smyth Rejoins MM&R

Magnus, Mabee & Reynard, Inc., New York essential oil house, has announced the return of Henry J. Smyth to its staff after four years in the service. Smyth, who was with the export department in New York until he entered the Army, now makes his headquarters at the Chicago branch office.

Hooker Moves Rue

Hooker Electrochemical Co. recently reported the appointment of John D. Rue as works manager of its Tacoma plant. Mr. Rue is experienced in the use of chemicals in the manufacture and bleaching of pulp and paper, and has been associated with the company since 1931.

Wilbert at Food Show

Wilbert Products Co., New York, occupied a booth at the recent Chicago convention of the National Food Distributors Association, displaying their "No-Rub" line of floor waxes, furniture polish, shoe white and shoe polish, with Sidney J. Weinberger in charge.

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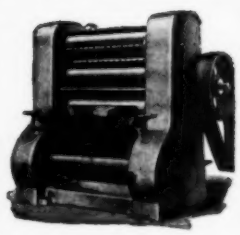

J. M. LEHMANN COMPANY, Inc. MAIN OFFICE and FACTORY Lyndhurst NEW JERSEY

Canadian Soap Data Given

The Dominion Bureau of Statistics reports that in the first seven months of this year, Canadian manufacturers have exported 15,870,713 pounds of soap. Annual production figures run around 235,000,000 pounds. Of this year's exports up to the end of July, 1,606,770 pounds were toilet soap and 14,263,943 pounds were other kinds. The total value was $1,587,225.

F. H. Lehberg, Oils and Fats Administrator of the Wartime Prices and Trade Board, declared late in September that the current Canadian soap shortage was not the result of unusually heavy exports but rather the direct result of industrial disputes at Canada's two major soda chemical plants and was not due to poor supplies of oils and fats, which are considered satisfactory. Mr. Lehberg pointed out that if it were not for the acute shortage of caustic soda, Canadian soap makers would have equalled, if not exceeded, the 1945 production of 255,000,000 pounds. Many soapers are now producing on a basis of 35 per cent of last year's production, and if they do not receive sufficient supplies of caustic soda in the near future, production will be practically at a standstill.

Commenting on the export statistics, Mr. Lehberg said that the greater portion of these exports went to UNRRA under a contract made in 1944 whereby Canada was to supply 60,000,000 pounds of soap for distribution throughout Europe. Asked about recent reports on exports to Newfoundland, Mr. Lehberg stated that only five or six million pounds of soap have been sent to Newfoundland, British West Indies and other British colonies under trade agreements which have existed for many years.

New Division At Seeley

In view of recently expanded factory facilities, Seeley & Co., Inc., New York, have announced the creation of an essential oils and aromatic chemicals division. Harold L. Janovsky, formerly the chief chemist and plant manager of the Farmingdale factory, has been appointed manager of the new division and will direct all operations.

CSA Plandome Golf Results

The silver anniversary golf tournament of the Salesmen's Association of the American Chemical Industry, Inc., was held September 19th at the Plandome Golf Club, Plandome, L. I. This was the final golf meeting of the year for the Association. Charles F. Alexander, of L. Sonneborn Sons, Inc., New York, won the Chemists' Club Cup, which is signatory of the championship of the Association.

Acidless Tallow Price

A ceiling price of 9⅛ cents a pound on acidless tallow oil or tallow, when sold to soap makers, was established by O.P.A.'s amendment No. 70 to Maximum Price Regulation No. 53 and went into effect September 23rd, 1946. Acidless tallow, principally used in the past for lubricating steam cylinders, came into use for soaps in 1945 because of the acute shortage of soap fats and O.P.A. price controls on many normal soap making materials. It has sold at as much as 4 cents a pound over the ceiling price for fancy tallow. The new ceiling price on acidless tal-

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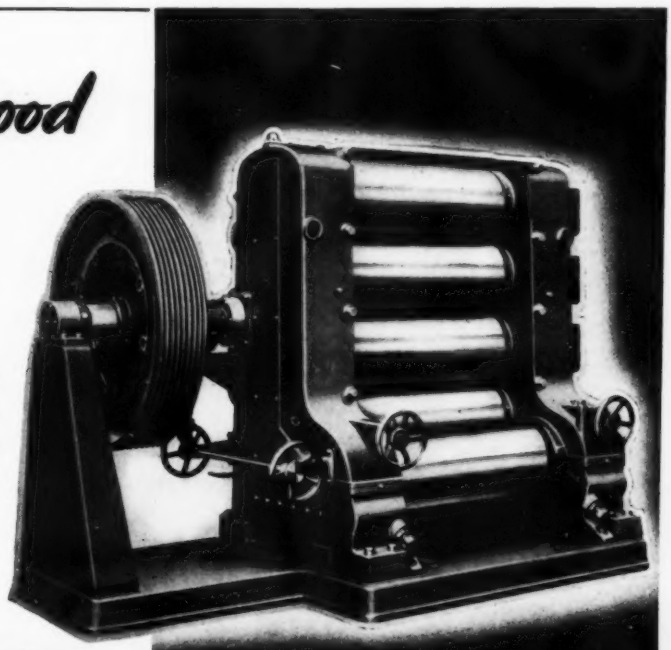

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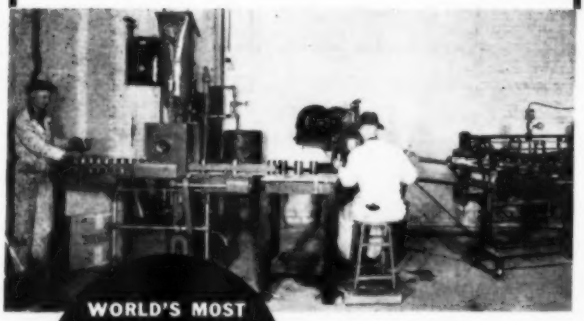

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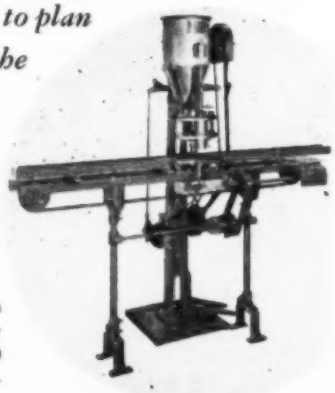

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low oil is ¼ cent over the fancy tallow ceiling and is considered by O.P.A. to be a differential more than ample to compensate for additional refining costs. Fancy tallows must have no more than 4 per cent free fatty acid content. The new amendment also sets a maximum free fatty acid content of 2 per cent for acidless tallows.

FAT AND OIL OUTLOOK

(*From Page* 44)

yielding crops to grain, part of the present program in the United States for alleviating famine in Europe, is not expected to continue. Nor is it anticipated that utilization of our peanut production in the manufacture of such edible products as peanut butter and salted nuts will remain at wartime rates.

Currently it is hoped that these factors will bring about a balance of supply and demand in the fats and oils field during the 1947-48 season, and also allow rebuilding of depleted stocks at both wholesale and retail levels. Thereafter, if butter production returns to prewar proportions we may be faced with a surplus of edible fats, provided that we continue to slaughter 70 million or more hogs and crush 150 million bushels of soybeans annually.

Until butter regains its former position in our fats and oils picture, the strong demand for margarine could absorb increasing amounts of all domestically produced oils, including soybean oil. Soybean output has expanded by some 100 million bushels, yielding nearly 900 million pounds more oil than in the years 1939-41. With uses for other oils established on a historical basis, it would seem obvious that soybean oil will be in urgent need of additional outlets, unless the drying oil field takes a greater proportion of alkali refined soya oil, or the fractionation process makes further strides. It may therefore be difficult to absorb the additional soybean oil and the fat from lard type hogs, when present urgent foreign needs are satisfied and we revert to a normal peacetime economy. Facing a one billion pound deficit in 1946-47, the most flexible factor to increase production and narrow the gap between supply and demand is the livestock and meat industry.

NSSA to Meet in Atlanta

The southern regional members of the National Sanitary Supply Association will meet in Atlanta on November 4th and 5th at the Henry Grady Hotel. John Walsh, Terco Chemicals, Atlanta, is the general chairman of arrangements. The regional meeting originally scheduled to be held in New Orleans Oct. 31st was cancelled because of the lack of sufficient hotel accommodations.

New Twin City Wax

A new type water-base paste wax designed for use on rubber and asphalt tile floors and similar surfaces has been announced by the Twin City Shellac Co., 340 Flushing Ave., Brooklyn, N. Y. The product is packed for the trade in 30 lb. kegs. The new water-base material is offered as a companion product to the company's regular Dan-Dee paste wax.

EXQUISITE FLORALS FOR SOAPS

Apple Blossom	Honeysuckle	Rose
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Coloring matter is removed from animal and vegetable oils containing a positively charged colloidal suspension of coloring matter by dissolving in the oil a metallic compound in a form which will react with an alkaline agent to form a negatively charged colloidal suspension. The alkaline agent is intimately mixed with the solution. Positively charged particles of coloring matter are thus rendered electrically neutral, and together with neutral coloring matter are adsorbed to the originally negative particles formed by the reaction of the metallic compound with the alkaline agent. Suitable metallic compounds are trimethyl aluminum, diethyl aluminum, tridodecyl aluminum, tetramethyl tin, and tetraethyl tin. W. L. Clayton, L. Fleming, Jr., H. Whittington, J. P. Fuesler, D. Cannafax, D. Sumners, J. M. Johnson, S. Oden, and W. L. Anderson. British Patent No. 570,040; through Chem. Abs.

Kreis Test

A simplified quantitative Kreis test was compared with peroxide numbers and iodine values during the prolonged rancidification of several animal and vegetable fats. The ratio of Kreis to peroxide values varied with the kind of fat and seemed to parallel its linoleic acid content. With vegetable oils containing a large amount of linoleic acid such as corn and cottonseed oils, the intensity of color at the time of peak color development was too great to be read on the colorimeter. With all fats for which accurate determination was possible, the Kreis values reached a maximum and began falling off while peroxide values were still increasing. Increasing the temperature caused a decrease not only in the peak values obtained for the Kreis test, but also in the ratio of Kreis to peroxide values. B. M. Watts and R. Major. *Oil & Soap* 23, 222-5 (1946).

Chromatography

Chromatography depends on the selective adsorption of one or more constituents of a solution. Methods for applying this principle are described for the determination of free fatty acids in fatty oils, oxidized acids and certain impurities of sulfur olive oil. A quantitative basis needs to be established for the relative affinities of solvents and adsorbents for materials in solution. K. A. Williams. *Analyst* 71, 259-63 (1946).

Soap Micelle Formation

The critical concentrations required for the formation of soap micelles can be determined by the spectral behavior of the dye-pinacyanol chloride. The absorption spectrum of this dye in aqueous soap solutions changes sharply with the character of its solutions in organic solvents over a short range of soap concentration. This effect is attributed to the formation of soap micelles, in whose hydrocarbon radicals the dye is solubilized.

The critical concentrations for formation of micelles as determined by this method are 2.3-2.4 x 10^{-2} molar for potassium laurate and 6 x 10^{-3} molar for the myristate. Some other critical concentrations are 3.6-5.2 x 10^{-4} molar for sodium cetyl sulfate, 7-12 x 10^{-4} molar for potassium oleate, and 2.5 x 10^{-4} molar for potassium dilinoleate. M. L. Corrin, H. B. Klevens, and W. D. Harkins. *J. Chem. Physics* 14, 480-6 (1946).

Fungi On Cotton Duck

Certain angiocarpous fungi heretofore unrecognized as being primarily involved in the decay of gray duck or in the decomposition of cellulose are reported as significant agents in the slow breakdown of cotton fabric during exposure to air. They are *diplodiella cowdellii, hendersonia sarmentorum, hendersonia sp., leptosphaeria sp., diplodia sp., phoma herbarum*, and *ophiobolus sp.* These fungi have tended to escape detection for two reasons: the employment of standard plating techniques which do not detect these slow-growing fungi; samples of gray duck develop these angiocarps only after long periods of aerial exposure. A quantitative method is given for evaluating fungal damage as distinct from nonbiological damage when these occur simultaneously. R. K. Zuck and W. W. Kiehl. *Am. J. Botany* 33, 374-82 (1946).

Water Softening Process

More efficient than the older methods of water softening with base exchange zeolites etc. is the use of polymerized synthetic resins with free hydroxyl groups. The water so produced is comparable to commercial distilled water. Such a de-salted water has many advantages in industrial processes, as in high-pressure boiler feed water, in processing textiles, and in laundry work where economy of soap results and purer whites and brighter colors are obtained.

In developing these resins, optimum chemical properties must be balanced with suitable physical characteristics. Research on these compounds is proceeding constantly. The newer products have increased chemical and mechanical stability, high capacity, increased velocity of exchange, and improved regenerating power. S. J. Hopkins. *Manufacturing Chemist* 17, 285-8 (1946).

Determining Neutral Fat

The acid number and saponification number of saponified tallow, tristearin compounds, and oleins, can be determined in one operation by measuring the caustic potash requirements before and after saponification. The degree of saponification should not be expressed as percentage of oleic acid because tallow contains palmitic acid. If the amount of neutral fat is of the order of 1 per cent, it can be calculated by the formula: per cent neutral fat equals 100 $(s - a)/s$, where s is saponification number and a acid number. J. M. Brignoni. *Anales asoc. quim. farm.* Uruguay 47, 148-58.

Hydrogenated Rapeseed Oil

Rapeseed oil was hydrogenated for three hours at various temperatures. At 36-80°C. the iodine number decreased only slightly and the original unpleasant odor was still present. At 80-82° the iodine number dropped from 105 to 62.8, giving a solid product with a good odor. At higher temperatures of hydrogenation, waxy, bland products resulted. L. Palfray. *Industries corps gras* 1, 169070.

SANITARY PRODUCTS

A SECTION OF SOAP

PROGRESS is being made in writing a new model insecticide law, or as it is more accurately designated, an economic poisons law. Through the cooperation of the Council of State Governments, the U. S. Department of Agriculture, and the trade associations of the industries involved, a new act which might serve as a model for state legislatures seems closer to reality than at any time since this knotty job was first attempted some ten years or more ago. The present draft of the model law is far more significant than any of its predecessors. Not only is it being written as a state model, but also with an eye to a new federal bill which will quite definitely come before the next Congress.

With the completion of the new model law,—and there is now full hope that this will be accomplished to the satisfaction of all government and industry groups,—the single largest step toward country-wide uniform economic poison legislation will have been taken. What a boon this would be to industry, especially manufacturers doing business in many states, is quite apparent. To those government men and representatives of industry who are working diligently, without fanfare or trumpets, to accomplish this, a vote of thanks is due.

THAT close cooperation over the years between government departments and industrial groups, particularly in the matter of technical advances, is an important contributor to the public welfare, has been demonstrated on numerous occasions over the years. Since its founding some thirty years ago, the National Association of Insecticide & Distinfectant Manufacturers has worked closely with the Department of Agriculture in behalf of product improvement and standardization, new scientific developments, testing procedures, law enforcement. Extensive progress in the industry has resulted. And the work still goes on. At present a joint committee of USDA and NAIDM is well on its way to develop testing methods for new type disinfectants, originated during the war, for which no method has heretofore existed.

IT could only happen in Brooklyn! A National League baseball game between the well-known "Bums" and the Chicago Cubs was halted last month when jillions of wind-blown aphids descended in a thick swarm upon the playing field and stands. The Cubs suspected another Brooklyn trick, but when the rabid denizens of the bleachers started for the exits en masse, the Cubs too knew that it must be the end. Next day, the newspapers heralded the fact that both field and stands following the aphid invasion had been well sprayed with DDT, the object apparently being to ward off another invasion and to put the minds of the populace at rest, the latter thought probably carrying the greater weight. This child-like faith in the wonders of science is heart-warming. In Brooklyn, nothing is completely futile, not even spraying a ball field against a wind-borne swarm of insects after their departure!

AGRICULTURAL insecticides, fungicides, rodenticides, weed killers, etc., "when packaged and branded as such" have now joined household insecticides in escape from OPA price controls. Only insecticides containing rotenone are now still under price control, the reason being the shortage of rotenone which threatens to continue in short supply for at least another year.

FURNITURE POLISHES

By Milton A. Lesser

A GOOD furniture finish requires proper care if it is to retain its quality and beauty. Indeed, furniture that is cleaned and polished regularly often increases in beauty and takes on an added richness of appearance as time passes. Barring abuse, the periodic employment of a suitable polishing preparation may make it unnecessary to refinish a piece of furniture throughout its entire life.

Furniture polishes should remove dirt and grease from the surfaces and restore their luster. With certain exceptions, the polish should be nearly complely removable, so as not to leave the surface in such a condition as to hold dust, reveal fingerprints or leave an objectionable odor. The chief exceptions to this last rule are polishes containing waxes, where it is desired to leave a thin protective coating that may be polished to a high luster. Furniture polishes should have no injurious effects, either on the finish or upon the wood. Hence such polishes should contain no alkalis or alkaline compounds that will injure the finish. Oils and solvents must be selected with due consideration to the type of finish. Cellulose ester lacquers, for example, may be attacked by products containing alcohol, benzol and certain other solvents. (1)

It is not a new thought that furniture polishes should be designed solely for the purpose of cleaning and polishing furniture. It is only on such a basis that it becomes possible to formulate products that work most efficiently and yield the best results. Very often, in both the technical and patent literature, polishes are described as being useful for both furniture and automobiles. On occasion, the indications for the product are even extended to include floors. As has been pointed out in previous discussions in this publication, (2, 3) automobile polishes and wax floor polishes are formulated to meet certain specific requirements which differ materially from those of furniture polishes.

The claim that furniture polishes are also suitable for use on automobiles is sometimes justified on the grounds that the finishes are often of the same types. Even in cases where this is true, one cannot overlook the fact that the amount and kind of dirt to be removed are quite different. Furniture is not exposed to the heavy dust and dirt of the road, nor is its soil influenced by the "fixing" effects of rain and sun. Hence, while an abrasive is an essential component of automobile polishes, it has little or no place in a product intended for furniture. As remarked by Small, (4) even if the abrasive were soft enough not to scratch the furniture finish, it would be deposited in grooves and carvings from which it is removed with difficulty. It is very much to be doubted that an intelligent housewife would ever make the mistake of using an abrasive-containing polish a second time on her precious furniture.

It has been said (5) that the general trend of development in furniture polishes has closely followed that of floor polishes. This, of course, is in reference to the growing utilization of emulsion products as compared with so-called oil polishes. Unlike furniture polishes, however, floor polishes are so formulated as to leave a comparatively heavy, protective film of wax on the surface—one that will stand up under the scuffing of shoes and other wearing influences. Housewives recognize that floor polishes are specialized products and, despite suggestions sometimes appearing on labels, generally limit such items to use on floors.

Many varied materials enter into the formulation of furniture polishes, but the number of ingredients is seldom an index of the efficacy of the finished product. In most cases an oil of some kind forms the basis of the polish. This may be used as such or in simple admixture with other oils, plus odorizing and coloring agents. Special viscous compositions, derived from castor oil, have been developed for use in furniture polishes (6). Very often the oil is diluted with an appropriate solvent or thinner. Newer turpentine products, which serve to improve the clarity of furniture polishes, are described in a recent patent (7).

Very commonly today, the oils are emulsified with water by means of emulsifying agents. Gums may be used for making the emulsions, but soaps are more generally employed for this purpose. A number of special soaps are very suitable, as are various special emulsifying agents like glyceryl monostearate, diglycol stearate and such. Newer emulsifying agents are constantly being developed; some

of them being especially appropriate for making furniture polishes of lower viscosity and improved spreading properties (8, 9). Neutral, highly sulfonated oils are sometimes used as emulsifying agents (10).

Although not used in all types of furniture polishes, waxes are important raw materials in making these products. Carnauba wax, beeswax, bleached montan wax, ceresin, paraffin wax and the like are often incorporated into polishes. Mixtures of waxes are employed to give more desirable properties. For example, a soft wax, like paraffin, is mixed with hard carnauba to improve the spreading power (10). Synthetic waxes also have a place in this field and quite a number of such materials are available under various trade names.

Various other materials may be included in furniture polishes. Dilute acetic acid solutions (vinegar) and antimony trichloride are often present in older types of products. Various perfuming materials, like pine oil, citronella oil, clove oil, oil of sassafras, are added to impart a pleasant odor or to mask the smell of certain ingredients. Colors, usually in the form of oil-soluble dyes, are added to give a distinctive appearance. Yellow, orange and red are popular colors, but other tints may be used.

Furniture polishes are provided as liquids or pastes, with the fluid type prodominating in popularity. Liquid products may be roughly classified as oil polishes and as emulsion polishes, with various possible grades of differentiation in both classes. Pastes may also be classed into two groups—namely, wax-solvent mixtures and wax emulsions.

Undoubtedly nothing compares with straight oil polishes with regard to simplicity of production. Most straight oil polishes consist wholly, or mainly, of a mineral oil. A neutral oil, like transformer oil or paraffin oil, may be used to make such polishes (1). One furniture polish on the market is said (4) to consist solely of colorless, straight mineral oil with a specific gravity of 0.8420 at 60°F. Mineral oil polishes are inexpensive and give a glossy polish if rubbed off thoroughly. However, considerable rubbing is usually necessary to obtain a good, really dust-free polish. The familiar and still popular "lemon oil" which housewives buy to polish furniture usually consists of nothing more than a light grade of mineral oil plus sufficient oil of citronella or other perfuming compound to provide a distinct lemon-like odor. Often a little oil-soluble yellow dye is added to tint the polish.

Sometimes various oils are blended in the hope of obtaining a product that will yield a good gloss with less labor. Another approach is to use volatile solvents or thinners to cut down oiliness. Combinations of linseed oil and turpentine have long been used for this purpose (11). Although such preparations are considered little better than modified paint formulas (12), some of them are well recommended. For example a formula 'for a good and economical liquid furniture polish" is described as consisting of:

	Parts
Linseed oil	1
Turpentine	2

This formula, it is said (13), cleans as well as polishes. It is suitable, not only for oil finishes, but can also be used satisfactorily on shellacked, varnished or lacquered surfaces. It can be improved somewhat by adding 1 to 2 ounces of beeswax to each three pints of polish; the wax being added to the slightly warmed linseed oil before admixture with the turpentine. This inclusion requires that the polish be well shaken before applying (1).

Various combinations of oils and solvents have been used in preparing oil polishes. One preparation of this sort consists of (4):

	Per Cent
Light spindle oil	60.0
Red oil, refined grade	3.0
Benzol	15.0
Methanol	20.0
Pine oil	2.0

Somewhat along the same lines is the following furniture polish listed by Belanger (14):

Light mineral oil	1 gal.
Gasoline	1½ pt.
Pine Oil	½ pt.
Cedar leaf oil	4 oz.
Oil-soluble color (red)	sufficient

Although the gasoline adds considerably to the cleaning action of the polish, it may be omitted where a low flash point is objectionable. A polish of this sort is applied with a soft cloth, rubbing well with the grain of the wood.

BECAUSE they still command a market, furniture polishes containing acidic components as cleansing aids warrant some mention. Dilute acetic acid, in the form of vinegar was long a popular addition to oil polishes. Illustrative is the following, frequently cited formula (1, 10) which was originally developed by the Bureau of Construction and Repairs, Navy Department, for use on varnish and paint coatings on wood:

	Pounds
Cider vinegar	125
Petroleum spirts	226
Turpentine	135
Denatured alcohol	22
Boiled linseed oil	100
Raw linseed oil	121

Sometimes combined with acetic acid, another popular addition was antimony trichloride, which hydrolyzes in solution to give hydrochloric acid. Described in many older texts, preparations containing antimony trichloride were outlined in a patent (15) granted only a little over a decade ago. One furniture polish, made with this salt as an ingredient, consists of (12):

	Per Cent
Light mineral oil	58.0
Antimony trichloride	2.0
Glycerine	7.0
Water	33.0

Products of this kind, classed as intermediate in type between oil polishes and emulsion polishes, require shaking before use. Because of the

Formulate your furniture polish solely to be specifically a cleaner and polisher of furniture rather than to be a general-purpose product.

acidic constituent, such polishes should not be packaged in metal containers.

BECAUSE of the many advantages and economies which they offer, liquid polishes of the emulsion type are finding increasing popularity with both the manufacturer and consumer. Unlike oil polishes, which are usually made by simple mixing, emulsion polishes require a good deal of skill and somewhat more specialized equipment to produce satisfactory items.

Among the simpler preparations are those employing various gums as the emulsifying agents. Only a small proportion of gum is needed, and often better results are obtained by the use of two such water-soluble materials, as in the following formula listed by Small (4):

	Per Cent
Kerosene	5.0
Light mineral oil	5.0
Glycerine	4.0
Gum arabic	1.0
Gum tragacanth	1.0
Water	84.0

More commonly, however, soaps are used as the emulsifying agents. A number of examples illustrating the direct use of prepared soaps are available from various sources including patents (16). Thus soft (potash) soap forms the emulsifying agent in the following furniture polish (17):

	Per Cent
Raw linseed oil	10.0
Spindle oil	50.0
Stoddard solvent	15.0
Xylol	5.0
Soft soap	1.0
Water	19.0

Containing a much higher proportion of water, but using a similar emulsifier, is a commercial product made from (4):

	Per Cent
Light blown castor oil	10.0
Light mineral oil (Sp. Gr. 36°Be.)	20.0
Xylol	9.0
Potash soap	1.0
Water	60.0

Some workers (5, 10) are of the opinion that better results are secured and a finer and more stable emulsion is secured when the emulsifying soap is formed *in situ*. Thus the requisite proportion of stearic, oleic or other fatty acid is added to the oily phase of the emulsion, while the saponifying alkali is dissolved in the aqueous phase; the soap being formed on mixing the two phases. Furniture polishes based on the emulsifying action of triethanolamine soaps offer excellent examples of such *in situ* formation. Thus, a standard oil emulsion polish may be made from (18):

	Pounds
Mineral oil	60.0
Naphtha	29.0
Stearic acid	9.0
Triethanolamine	4.3
Methanol	4.0
Water	120.0

Mix together the mineral oil, naphtha and add the stearic acid. Heat to about 60°C., until the acid dissolves and clear solution forms. Mix the other ingredients in a separate vessel and bring to the same temperature. Add the aqueous solution to the first mixture and stir vigorously until a smooth emulsion results. Continue with gentle stirring until cool.

A somewhat more elaborate polish, made in the same way as the above, has been suggested by Auch (19):

	Parts
Paraffin oil	25.0
Naphtha	12.0
Pine oil	1.5
Stearic acid (double pressed)	4.0
Denatured alcohol	2.0
Triethanolamine	2.0
Water	53.5

By replacing part of the paraffin oil with deodorized kerosene or painters' naphtha, the cleansing action of this polish may be increased and the tendency toward showing finger marks reduced.

Other emulsifiers are also quite appropriate for making furniture polishes. For example a very satisfactory white furniture polish, based on the action of diglycol stearate, can be made by heating the following materials together and then stirring vigorously until a uniform milky product is obtained; stirring being continued intermittently until cool (20):

Diglycol stearate	1 oz.
Mineral oil	5 fl. oz.
Water	3 gal.

Sulfonated oils, like a good grade of 50 per cent sulfonated castor oil, may also be used as emulsifying agents in making furniture polishes. Tyler (10) has cited the following two formulas as examples of successful commercial products; the proportions being given by volume:

	I	II
Mineral oil	48.0	38.0
Sulfonated castor oil	14.0	12.0
Water	38.0	50.0

Products of this type look like oily liquids rather than the usual emulsion preparations. They are said to be very popular. A variation of these simple formulas calls (20) for the use of:

	Parts
White mineral oil	2
Kerosene	4
Sulfonated castor oil	1
Water	4
Perfume oil	sufficient

Mix the kerosene and mineral oil; add sulfonated oil with vigorous stirring, then run in the water while mixing briskly. Finally add the perfume in the proportion of about ¼ ounce per gallon of polish.

Surface active agents or synthetic detergents are finding increasing use in making furniture polishes. Methods of using materials like sodium lauryl sulfate are given in the patent literature (21).

THE great popularity of furniture polishes based on oil and water emulsions stems from the fact that they are easy to apply, quick-acting, and give good luster. However, they do not leave the same hard and more durable films obtainable with wax-containing polishes. Liquid waxes, as they may be called, are usually thicker than oil emulsion polishes and generally require more rubbing to obtain a high gloss. Nonetheless, their more permanent effects and the greater protection afforded are definite advantages. Hence such products are in demand, especially for polishing fine furniture.

Single waxes are sometimes used in making liquid waxes for furniture, but more commonly a mixture is employed to facilitate rubbing and polishing. Volatile solvents are often included as added dispersing agents for the waxes. Thus a typical preparation, of British origin (22), with soap as the emulsifying agent, is made from:

White wax	1 lb.
Beeswax	2 lb.
White soap	1 lb.
Oil of turpentine	1 gal.
Water	1 gal.

The waxes are melted at a gentle heat and the turpentine added and mixed in. The soap, previously dissolved in the water is then added and the whole mass stirred continuously until cool.

Of related interest is another soap-emulsified, "non-rubbing" furniture polish, given in Bennett's text (17) as follows:

	Parts
Castile soap	10

Carnauba wax	40
Formaldehyde	2
Water	310

Dissolve the soap in 160 parts of water and heat to boiling. Add the carnauba wax in small pieces. Stir constantly until a smooth homogeneous emulsion is obtained, then cool to 60°C. by adding the rest of the water. Filter through cheese cloth and add the formaldehyde as a preservative.

Triethanolamine soaps are also good emulsifiers for making liquid waxes, as in the following example (18):

	Paunds
Carnauba wax	10.0
Beeswax	4.0
Ceresin wax	4.0
Naphtha	30.0
Stearic acid	8.0
Triethanolamine	4 8
Water	200.0

Melt the waxes and stearic acid, preferably in a jacketed kettle, and add the triethanolamine, with the temperature at about 90°C. Add the naphtha slowly so as to maintain a clear solution. Add the boiling water to this solution and stir vigorously until a good emulsion is obtained, and then slowly, until cold.

Other emulsifiers, like diglycol stearate, may also be used to make liquid wax polishes. Noteworthy in this connection are several new synthetic surface agents, described in recent patents (8,9), as being especially suitable for making wax polishes.

PASTE type furniture polishes do not command the same popularity as liquid products, but they cannot be ignored. Paste waxes give good durable finishes, but require more labor in their application than other types of furniture polishes. Older polishes of this kind consist essentially of wax or waxes thinned or pasted with solvents. As a rule such products are not especially complex either with regard to formulation or manufacture; the wax component being melted on a water bath and the solvent thinners added with stirring. Cooling should be rapid to avoid the formation of large wax particles, with constant stirring to assure a smooth, creamy product.

Illustrative of the simplicity of such products is a formula calling for (17):

Turpentine	1 pt.
Beswax	1 lb.

Probably more typical of commercial products is a paste wax polish consisting of (10):

	Per Cent
Petroleum naphtha	74.0
Mixed waxes	26.0

The wax mixture consists of about 25 per cent carnauba wax and 75 per cent of paraffin wax. Admixture of the two provides a better spreading product than can be obtained with carnauba alone.

Another, slightly more complex product may be made by the following formula presented by Smither (1) of the National Bureau of Standards:

	Parts
Carnauba wax	2
Ceresin	2
Turpentine	3
Gasoline (Sp. Gr. about 0.73)	3

Such a formula may be modified to meet varying requirements by mixing other waxes with the carnauba base. The thickness of the paste is controlled by the amount of solvents used and if the proportion is high enough a liquid wax may be obtained.

Quite interesting and also rather unusual is the use of lanolin in a furniture wax paste. According to Lower (23), the lanolin appears to act as a dispersing agent for the waxes, in turpentine, in the formula:

	Parts
Paraffin wax	20
Ceresin wax	5
Lanolin	5
Beeswax	10
Carnauba wax	10
Turpentine	10

By using emulsifying agents it is possible to greatly reduce the amount of solvent required and secure the other benefits of emulsion-type products. Thus with soap as the the emulsifier, a furniture paste may be made according to the following formula, given in an older reference text (22):

	Parts
Curd soap	1
Water	10

Dissolve by heating and add to the following mixture, previously liquefied, and stir until of a creamy consistency:

	Parts
Yellow wax	3
White wax	1
Oil of turpentine	4

Triethanolamine soap is formed in the following case (18) to serve as the emulsifying agent in making a furniture polish of the wax paste type:

	Pounds
Carnauba wax	30.0
Beeswax	15.0
Ceresin wax	15.0
Turpentine	26.0
Naphtha	24.0
Stearic acid	8.0
Triethanolamine	4.3
Water	65.0

Another type of amino soap is employed in the following furniture paste polish, in which (17) a small quantity of free fatty acid is included, presumably to facilitate polishing:

	Parts
Carnauba wax	60
Turpentine	60
Stearic acid	2
Trihydroxyethylamine stearate	12
Water	62

Heat the first three ingredients to 200°F. In a separate vessel, heat the stearate in the water to the same temperature, and run slowly into the previous mixture with vigorous stirring. Continue stirring until homogeneous.

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ANTU - - -

By E. H. Rieman

Grasselli Chemicals Department
E. I. du Pont de Nemours & Co.

a progress report detailing results obtained with this new and highly effective rodenticide

IT has frequently been said that rats destroy more property than any other animal except man himself and are responsible for more human deaths than all the wars in history. Somebody has calculated that rats are stealing and spoiling food in the United States at a rate beyond the capacity of 200,000 farmers to produce. Granting that the rat is Public Enemy No. 1, why, in the face of persistent extermination efforts over the years that include ferreting, starvation, trapping, gassing and poisoning, has this scourge not been wiped out long ago? Why, in fact, are we so complacent about rats, tolerating their depredations and disease-spreading activities?

The answer is found in the indifferent results obtainable with previous control methods and materials.

The farmer suffers worst from rats. (More than 75 per cent of the total rat population is harbored on farms and in small towns). An accepted cost to the farmer is two dollars a rat per year, and, according to 14,650 replies to a Biological Survey questionnaire to Northeastern and Midwestern farmers, the average loss per farm is $35. Some authorities assert the toll is considerably higher. Chances are that most of these farmers, at one time or another, tried controlling the rats on their farm, only to give up in disgust over inconsequential results as well as the necessity for repeated treatment merely to keep the rodents in check.

Rodenticides

SOME of the poisons employed are: strychnine, arsenic trioxide, phosphorus, barium carbonate, zinc phosphide, thallium sulfate and red squill. These reach the household market as powder, paste, biscuit and pellet mixed food, liquid and poisoned seed. Apart from the annual quantity used by pest control operators, total rodenticides retail sales, admittedly difficult to establish with certainty, according to a recent market survey, are between $7,500,000 and $15,000,000.

Most of the familiar poisons are extremely toxic to all animals and must be used in baits that make them available and attractive to pets, livestock, poultry and even to children. Red squill, because it offered a somewhat greater margin of safety, rapidly gained greater acceptance than any of the other rodenticides following its introduction into the United States in 1923. It has serious disadvantages, however. In the first place, the toxicity of red squill varies widely. The lethal dose is so large (500 milligrams per kilogram of body weight) that frequently rats are incapable of eating enough bait containing the poison to kill. And once sickened by a sub-lethal dose, rats are unlikely to be tempted a second time by a red squill treated bait.

1080 and ANTU Are New

WARTIME research developed two new raticides. Sodium fluoroacetate or 1080 is the most deadly, according to the U. S. Fish & Wild Life Service, its discoverer, but like thallium sulfate its extreme toxicity to warm-blooded animals is a great weakness. There is no known antidote. In addition, the hazaard is increased by the possibilities of secondary poisoning, that is, the danger of animals being killed by merely biting other animals poisoned by 1080. 1080 is prohibited for non-professional use because of its extreme toxicity.

ANTU, the war-born companion, is already nationally available in "ready to use" formulations and has already

demonstrated that it is highly effective. It is very deadly to the common Brown or Norway rat which represents an estimated 90 per cent of the total rat population in this country, other rat species being confined to the Gulf and South Atlantic coastal states. For the first time since the poisoning technique came into practice, 100 per cent extermination results are being commonly reported.

This oyster-white powder is sufficiently toxic to warrant careful usage. Dogs, baby chicks, and pigs, for example, can be killed if proper procedures are not followed scrupulously.

The development of ANTU is quite interesting. Its origin goes back to a piece of academic research carried out about 14 years ago by Dr. A. L. Fox, then a chemist in the Jackson Laboratory of the Du Pont Company. In some way, Dr. Fox discovered that phenyl thiourea, chemically a first cousin, had an extremely bitter taste to most people, while others found it tasteless.

First, and last, Dr. Fox in his private investigations probably recorded the taste sensations of a thousand or more different persons and the paper he published (1) covering the results attracted considerable attention, particularly among geneticists and others interested in heredity.

Dr. Curt P. Richter of Johns Hopkins Hospital, studying the choice of diets of rats, found these animals capable of selecting beneficial foods and avoiding harmful ones. Quoting from Dr. Richter in this respect: "This ability to make beneficial dietary selection was found to be lost when taste nerves were sectioned; accordingly, it was concluded that some connection exists between the taste of substances and their nutritional or toxic values." (2)

In order to test his theory, Dr. Richter carried out tests with a variety of chemical substances, including phenyl thiourea. Quite obviously, he selected this material because of the work done by Dr. Fox back in 1931. Following the usual method of testing taste ability in human beings, Dr. Richter placed a few crystals of phenyl thiourea on the tongues of six rats. Since literally hundreds of persons had been subjected to taste tests with this substance without any ill effects, Dr. Richter was greatly surprised to find all six rats dead the next morning.

During his following work, Du Pont synthesized and supplied over 200 samples of thioureas and related compounds. From this list alpha naphthyl thiourea (ANTU) proved to be the most efficient. At the date of this writing, all the ANTU used scientifically and more recently by pest control operators and that supplied to compounders has been manufactured by Du Pont at its Fine Chemicals Plant in New Brunswick, N. J.

Advantages of ANTU

THE toxicity of ANTU to the Common Brown rat is so extremely high as to make it virtually a sure killer. Table 1 shows ANTU is, for all practical purposes, as deadly as 1080, a fact that has escaped many pest control people. Note also the comparatively large dosage of fortified red squill necessary to kill. The relative toxicity of 1080 and ANTU to dogs (Table II) is significant. 1080 is 20 to 40 times *more* poisonous to dogs than to rats. ANTU is 5 times *less* poisonous to dogs than to the Brown rat.

ANTU is probably not highly toxic to man but in the absence of definite knowledge, all necessary precautions should be observed. The high resistance of monkeys to the poison suggests that humans may likely have a high resistance. In wide use in Baltimore for more than three years in private residences, cellars, yards, public buildings, stores, etc., no accidents to humans occurred, although a few domestic pets were poisoned. Several thousand persons have handled ANTU mixed in bait without skin irritation or signs of poisoning.

A most successful means of using ANTU is as a tracking poison in concentrations of 20-50 per cent. Sprinkled or blown liberally on surfaces across which rats travel, or down burrows, ANTU kills within 12 to 36 hours after the rodents lick the substance off their feet. This method, where practical, eliminates or reduces the labor and uncertainty of baiting and obviously reduces the hazard to other animals, especially when dusting is done on pipes, rafters, down holes and other inaccessible places.

A large majority of replies to a questionnaire sent by the Du Pont Company to 50 leading pest control operators who had experience with ANTU, lauded the tracking poison technique as rapid, safe and astoundingly effective. No suitable tracking poison has previously been available.

Disadvantages of ANTU

THE important disadvantages of ANTU appear to be: (1) a minimum tolerance of 30 days develops from a single sub-lethal dose, and, (2) ANTU is not particularly effective against the Black rat and the roof rat which, however, represent only 10 per cent or less of the total rat population. It might well be pointed out that with reference to Table No. I there is little excuse for sub-lethal dosage with a substance that kills in a dose range of 6 to 8 mg/kg as compared to red squill that kills at upward of 500 mg/kg. Mice are not easily controlled by ANTU. ANTU is also insoluble in water.

Commercial Possibilities

IN view of the uniformly excellent practical experience reported up to this time with ANTU compounds, it seems reasonable to assume that it not only will replace to a considerable extent the poisons now used as raticides, but also will substantially increase interest in and demand for rat control as the efficiency of ANTU becomes more widely recognized. This forecast is based on the following:

1. ANTU is much more effective. Most pest control men who have used it are enthusiastic, claiming numerous cases of complete control. Best results are obtained with low concentrations.
2. Easy to use, especially as a tracking poison.
3. Uniform toxicity, particularly as compared to red squill.
4. Appears less hazardous to other animals when compared to all poisons except red squill.
5. Inexpensive on a cost efficiency basis.
6. Market has long needed a product of satisfactory effectiveness that would stimulate interest in rat control.

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TABLE I
Comparative Toxicities of Seven Rodent Poisons

Poison	Milligrams of poison per kilogram of body weight required to kill 50% of the animals
1080	4.0- 5.0
ANTU	6.0- 8.0
Thallium Sulfate	25.0
Zinc Phosphide	40.0
Arsenic trioxide	25.0-100.0
Fortified red squill (females)	300.0-400.0
Fortified red squill (males)	500.0-600.0
Barium carbonate	700.0-750.0

Case Histories & Comment

ONE operator who holds a contract to treat a heavily infested dump on the margin of an Eastern city, defied observers to find a live rat after treatment with ANTU. Previous repeated efforts had served only to keep the rat population from reaching the saturation point.

The method used on the dump has much to recommend it. The operator built a number of bait boxes with 3-inch holes large enough to admit rats but not scavenging dogs and cats. These were prebaited with a rotation of baits until it was certain that the rats were habitually going to the boxes for their meals. The amount of unpoisoned food consumed indicated when foraging apparently ceased and suggested the opportune moment for action. Then the bait—the one found most acceptable — was lightly mixed with ANTU and repeated several succeeding nights. More than 10,000 carcasses demonstrated the result.

• • •

In a wood and concrete floor building housing 75,000 laying hens, an Illinois exterminating Company employed a 50 per cent dust. Since the rats had dug into the wire-covered dropping pits, it was possible to dust runways with complete safety. By actual count, 119 dead rats were found the day following treatment.

• • •

The manager of one of the largest pest control companies in the East described a restaurant job in these terms: "We had been using red squill every three or four months and getting what we thought were fair results—12 to 15 rats after each baiting. I decided to try ANTU. We baited one afternoon at 4 o'clock. The next morning we found 136 dead rats. They were all over the place—on the floor, on chairs and even on tables."

• • •

A New York City firm offers the opinion that some failures can be traced to treating bait too liberally. "Rats shy away from bait containing 5 per cent or more of ANTU because they taste it. One per cent is as deadly to the Brown rat and he can't taste what you're feeding him."

• • •

Many other comments are noteworthy:

"Where rat-proofing is out of the question, ANTU, when intelligently applied, and as often as required, will prove most effective. Rats won't always indulge in placed bait but the tracking method works all the time—if in sufficient quantity and properly placed."

• • •

"Where foodstuffs are available in large quantities, bait is a poor method. ANTU gives good results, in fact, perfect, when used as a tracking poison under these conditions."

• • •

"I enjoy working with ANTU. Results are in preparation of chemical with the bait. Too much ANTU is easy to use on bait. Mix properly, wrap in wax paper, and place where each bait will act as individual unit. This procedure will 'get results,' I'm sure."

"My advice is to treat large areas all at once and thoroughly. Do not repeat for at least six weeks."

• • •

NEGATIVE results were reported in but three of the fifty case histories received. Failure was clearly attributable in these instances to dusting with low concentration mixtures. (Liberal application of a 20-50 per cent dust is recommended. Higher concentrations should not be used when there is a possibility of rats tracking poisons into foodstuffs or equipment used in the preparation of food.)

A field agent of the Fish & Wild Life Service says, "ANTU appears to be relatively less toxic to other animals than anything except red squill. It is next to squill in safety on the list of poisons."

This authority continued by pointing out the possibilities of ANTU as a 5-10 per cent suspension in water on certain locations.

While it is admitted that rats have often died and will continue to do so, in treated buildings, the Fish & Wild Life representative added that, "generally one is less likely to be bothered with decomposition odors from carcasses when a slow acting poison like ANTU is used. Rats head for burrows when sickened and when they die, odors are seldom noticeable. In the case of ANTU, I wouldn't be surprised if many rats head for open air because the poison slowly suffocates them."

(*Turn to Page* 153)

TABLE II
Estimated Minimum Amounts of ANTU Required to Kill 100% (=LD100) of Certain Animals and Birds When Given by Mouth

Animal or Bird	Amount of ANTU in mg/kg of body weight
Laboratory rat, adult (*Rattus norvegicus*)	6- 8
Norway rat, adult, wild (*R. norvegicus*)	10
Norway rat, young, wild (*R. norvegicus*)	20- 50
Domestic dog (*Canis familiaris*)	50
Pig (*Suis scorfa*)	25- 50
Roof rat (*R. rattus subspecies*)	250 or higher
Squirrel (*S. carolinensis*)	50-250
Rabbit (*Lepus*)	400 or higher
Guinea pig (*C. cobaya*)	400
Domestic cat (*Felis libyca domestica*)	100
Domestic chicken (*Barred Plymouth Rock*)	5000*
Monkey (*Macaca mulata*)	5000*

* Data from C. P. Richter only

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75 pounds "PALMETO" wax
12 pounds carnauba wax
15 pounds Ivory Soap, or equal
15 pounds Borax
1345 pounds Water

1. Melt waxes together
2. Add soap with agitation
3. When soap is dissolved in wax drop temperature to 205 Fah.
4. Add hot solution of borax in about 5 gallons of water, at 205 Fah.
5. Agitate to form a gel
6. Reduce gel by adding boiling water, in the usual manner
7. When wax-in-water phase is attained, add sufficient hot water quickly to reduce to 8% solids (balance of 1345 pounds)
8. To the above add 292 pounds of 12% shellac solution, made with ammonia and water

The resultant product is a "rubless" wax, light in color, stable and non-tacky, that will dry bright in twenty minutes to a hard glossy finish, equal to polishes made with carnauba wax.

"PALMETO" wax is available for prompt shipment and on contract at 69c per pound FOB Brooklyn. It is packed in lumps, in burlap bags of about 150 pounds net each. A large working sample will be sent to you gratis upon request.

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The formula given above is based on actual tests over a long period of time, but of necessity variation may be made to suit individual requirements and we of course cannot guarantee results. We urge you to confirm our suggested formula before adopting.

Insecticidal Cords

A convenient method of generating insecticidal smoke by burning cords impregnated with DDT or other toxic materials

By David E. Pearsall and Philip P. Wallace
Bickford Research Laboratories

INVESTIGATIONS have been undertaken to determine the effectiveness and utility of a new method for applying DDT and other insecticides which can be readily volatilized by heat. The process consists essentially of the vaporization by controlled heat of an insecticidal chemical which has been incorporated in a combustible cord called "Cordacide."*

It has been found that when certain chemicals are employed, vapors are liberated and dispersed which at low concentrations are toxic to insects. Of the insecticides tested rotenone, pyrethrum, nicotine and DDT have been employed successfully, but the latter material immediately appeared so promising that cord containing DDT has been used almost exclusively during the period of development.

"Cordacide" is approximately ⅛" in diameter and constructed in continuous lengths. It will be supplied commercially in standard lengths in individual containers. On ignition, the cord burns rapidly and the heat of combustion vaporizes the DDT which is dispersed in the air as a voluminous whitish vapor composed of extremely minute particles. In this form, DDT is exceptionally efficient in killing insects which are susceptible to DDT poisoning. At a suitable dosage, a complete knockdown of houseflies is obtained in 20 to 30 minutes. Since the vaporized DDT is suspended in the air as very small particles, the time required for complete deposition is in the range of 1 to 2 hours which is considerably longer than that for atomized sprays or the conventional aerosols. The thickness or weight of the deposit is determined by the vapor concentration and exposure time (up to about 2 hours).

Completeness of vaporization and low degree of decomposition of the DDT incorporated in the cord are controlled by proper heat balances and by the physical structure of the cord itself. Its insecticidal evaluation is therefore more correctly described on the basis of the toxicity per foot of cord rather than as the efficiency of a known weight of DDT. Thus a concentration produced by burning 1 foot of cord containing about 400 mg. DDT/ft. to each 60 cu. ft. of volume produced a complete knockdown of the housefly *Musca domestica L.* in 30 minutes; while a 1 hour exposure produced a residue on screen cages which was effective four weeks after treatment.

This method of application is well suited for the treatment of insect pests in enclosed area and possesses certain distinctive merits:

1. DDT vapor at a low concentration produces a complete knockdown and kill of houseflies after 30 to 60 minutes exposure.

2. At a dosage within practical limits, a DDT residue is deposited which in effectiveness against household pests compares favorably with so-called residual DDT sprays.

3. Application is simple and the deposit from residual treatment is practically invisible to the unaided eye.

Test Insects

SPECIES of insects tested include the silverfish, *Lepisma saccharina* L.; the American cockroach, *Periplanata americana* L.; the large milkweed bug, *Oncopeltus fasciatus* Dall.; the sawtooth grain beetle, *Oryzaephilus surinamensis* L.; the red-legged grasshopper, *Melanoplus femur-rubrum* DeGeer; the carpet beetle, *Attagenus piceus* Oliv.; the webbing clothes moth, *Tineola bisselliella* Hum.; the wasp, *Polistes* sp.; the bedbugs, *Cimex lectularius* L. and *C. Adjunctis* Garb.; the green-bottle flies, *Lucilia* spp.; and the house fly, *Musca domestica* L.

Since *M. domestica* is easily reared and is widely employed as a test insect, this species has been used throughout the development. Flies are raised in conformity with the Peet-Grady method and are fed evaporated milk diluted 1 part to 3 parts of water. The rearing and holding room is maintained at a temperature of 80 ± 2° F. and at 50 ± 20 percent relative humidity.

Initial tests were conducted in a cylindrical metal chamber of 2.5 cu. ft. capacity. A small fan was used to

* CORDACIDE is a cordlike product, lengths of which are packed in dispenser containers, for the vaporization and dispersion of insecticides, etc., by means of controlled heat. This product has been developed at Bickford Research Laboratories during the past two years by David E. Pearsall, former Ensign-Bickford Company Fellow at Mellon Institute of Industrial Reesarch. The preliminary entomological testing program was carried out at the Connecticut Agricultural Experiment Station at New Haven, Conn. Following this, a biological testing laboratory was established at Bickford Research Laboratories with Philip P. Wallace—formerly with the New Haven Station—as entomologist.

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circulate the vapor but was later discarded when it was found that the vapor disperses very well without any circulator. This small container was reasonably satisfactory for preliminary tests but the length of the cord required was so small that the chances for error were excessive. Therefore a cubical chamber 6′ x 6′ x 6′, was constructed and equipped in essentially the same manner as the Peet-Grady chamber with a large-capacity exhaust fan, tight-fitting door, observation window, and a small slide-panel door at floor level. The room in which the exposure chamber was located was also maintained at approximately 80° F. Later tests were made in a chamber having a volume of 590 cu. ft.

The Peet-Grady method for exposure of flies was not developed for the testing of insecticides with important residual properties, and the liberation of free flies in the chamber has obvious limitations for tests of such insecticides as DDT. Confinement of flies in screen cages during exposure and the holding period has proved to be a satisfactory method here and a comparison of screen materials available (Table No. 1) indicated that no differences in fly kills could be attributed to the cage materials tested.

Table No. 1

Effect of Cage Materials on Kill of M. domestica

Test Conditions: Dosage 1 ft./20 cu. ft. for 20 min.

Cage Materials	*Percent Kill (24 Hrs.)*
Black wire screen, #14 mesh	95.0
Galvanized wire screen, #14 x 16 mesh	97.0
Plastic screen, #12 mesh	100.0
Copper screen, #40 mesh	94.0
Cardboard box	97.0

Therefore because of availability and cost, No. 14 mesh, black screen wire has been used for cages. The dimensions of the exposure cages were also largely determined by the availability of seamless, round tin boxes, 2⅜ inches in diameter, one part of which was used for the base and the other for the top of the screen cylinder. The maximum satisfactory height for a cage of this diameter is six inches, giving a capacity of 26 cu. in. Approximately 1 cu. in. is allowed per fly. These cages may be used repeatedly if they are washed with a volatile solvent for DDT such as toluol or xylol.

The desired dosage of cord was placed in a container in the center of the floor of the exposure chamber, and the fly cages were placed around the chamber, one foot from the wall, on the floor or at any convenient elevation. The operator ignites the cord and has adequate time to leave and close the door. Since in this chamber about one minute was required between the time of ignition and complete dispersion of the vapor, this period is allowed in all cases before the timing of the exposure. Immediately at the end of the exposure time, the slide door is opened and the exhaust fan started so that the chamber may be entered and the cages removed to the holding room within 60 to 90 seconds. The flies are retained in the same cages and—if held—they are supplied a ball of cotton soaked in 10 per cent honey solution. Knockdown is recorded immediately after removal or at desired intervals thereafter. Changing the flies to clean cages for the holding period has been attempted but proved impracticable here.

Repeated trials of holding flies in control cages have indicated that the natural mortality of healthy flies during a 24 hour holding period is less than one per cent.

Exposure Cage Location

SINCE it might be assumed that the concentration of DDT and the kill of insects would be greater at the floor level, the effect of position of exposure cages within the chamber has been investigated. Each test constitutes ten cages of approximately ten flies each and the variation within tests was slight.

Table No. 2

Effect of Exposure Cage Location

Test Conditions: Dosage 1 ft./30 cu. ft. for 10 minutes

Elevation	*Total Flies*	*Percent Kill (24 Hr.)*
On floor	107	67
3 ft. level	103	69
6 ft. level (ceiling)	101	66

The percent kill of flies exposed at different levels in the chamber was remarkably uniform (Table No. 2) but the relative concentration of toxicant at these locations after a considerable time is unknown and it is probably difficult to determine accurately.

Persistence of Vapor Toxicity

BY entering caged flies into the exposure chamber at regular time intervals after release of the vapor and removing them after a common exposure period, it has been possible to evaluate the progress of loss in toxicity of the vapor. It may be assumed that this loss is due to deposition of the DDT out of air suspension onto the inner surfaces of the exposure chamber. In each of the tests summarized in Table No. 3, 10 cages of approximately 10 flies each were used. The cages of each group were handled on a tray and entered and removed precisely on time through the slide port at floor level with very little loss of vapor.

Table No. 3

Effect of Delayed Exposures (M. domestica)

Test Conditions: Dosage 1 ft./30 cu. ft. for 10 minutes

Minutes Delay for Entrance	*Total Flies*	*Percent Kill (24 Hr.)*
In at start	115	65
10	114	53
20	105	69
30	109	75
40	124	36

It is clearly shown that any loss in toxicity of the vapor which occurred up to 40 minutes after its release was not measurable by this method of bioassay. After 40 minutes, the vapor toxicity dropped rather sharply but persisted in decreasing amounts up to a period of about 2 hours.

Dosage Response

THE data given in Table Nos. 4 and 5 are representative of the dosage response trends of houseflies to DDT vapor evolved from this cord burned unconfined. Here the immediate knockdown was neglected and mortality counts were made 24 hours after treatment. Three replicates constitute each test and the error within tests was negligible.

In Tables 1-5 inc., the data were obtained from cord burned unconfined on wooden or metal surfaces.

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The data contained in Table Nos. 6 and 7 were obtained from tests on cord held in dispenser packages, under which conditions the greatest efficiency of knockdown is obtained.

Table No. 4

Effect of Exposure Time on Kill of M. domestica

Test Conditions: Dosage 1 ft./60 cu. ft.

Minutes Exposure	*Total Flies*	*Percent Kill (24 Hr.)*
10	38	66.0
14	35	86.0
20	42	97.5
40	41	100.0

Table No. 5

Effect of Vapor Concentration on Kill M. domestica

Test Conditions: Exposure Time 10 minutes

Concentration	*Total Flies*	*Percent Kill (24 Hr.)*
1 ft.-60 cu. ft.	38	66.0
1 ft.-30 cu. ft.	33	83.0
1 ft.-15 cu. ft.	36	97.5

possible that the additive effect of deposit may be of some importance in fly knockdown during exposure to the vapor.

The Residual Toxic Deposit

EFFECTS of the deposit of DDT left on screen cages by vapor treatment were noted at the beginning of the testing program. In early tests when screen cages were exposed for 40 minutes to the vapor from the unconfined cord at a concentration of 1 ft./15 cu. ft. and flies were entered 4 days later, in ten replicates of ten flies each, the kill after 24 hours was 70.5 per cent.

The observations of later tests made on cord in dispenser containers are given in Table No. 8. Cages only were exposed and were used only once. Each test constituted 3 replicates of 20 flies each which were held for 24 hours. The immediate knockdown and kill of

Table No. 6

Effect of Exposure Time on Kill of M. domestica

Test Conditions: Dosage 1 ft./75 cu. ft.: Container vent screened; 3 replicates of approximately 20 flies each

Mins. Exposure	*Total Flies*	*Percent Knockdown*						*Percent Kill (24 Hr.)*
		Immed.	*+10 min.**	*+20 min.*	*+30 min.*	*+40 min.*	*+60 min.*	
10	58	0	2	14	20	26.0	41.5	71
20	66	29	52	59	70	71.5	73.0	100
30	63	54	78	90	91	91.0	92.5	100

* 10 minutes after removal from exposure chamber.

Table No. 7

Effect of Vapor Concentration on Kill of M. domestica

Test Conditions: Exposure Time 30 minutes, other conditions as Table 6

Concentration	*Total Flies*	*Percent Knockdown*						*Percent Kill (24 Hr.)*
		Immed.	*+10 min.*	*+20 min.*	*+30 min.*	*+40 min.*	*+60 min.*	
1 ft.-100 cu. ft.	61	38.0	54	70.5	82	87	94	100
1 ft.- 75 cu. ft.	65	46.0	93	93.0	97	97	97	100
1 ft.- 60 cu. ft.	66	95.5	100	...	..	..	..	100

By making frequent observations it was possible as a matter of interest to note the progress of knockdown on the treated fly population.

Any discussion of the relation between exposure time and fly knockdown must take into account at least two opposing factors: 1. the vapor concentration is continually decreasing after its initial peak, 2. the deposit to which the flies are also exposed is continually increasing. Although practically no flies were knocked down at the conclusion of 30 minutes exposure to a heavy residue on screen cages, it is flies exposed to the vapor while cages were being treated was complete.

Table No. 8

Effect of Residual Deposit to M. domestica

Test Conditions: Exposure Time 60 minutes

Days After Exposure	*Percent Kill (24 Hrs.)*	
	Concentration 1'/50 cu. ft.	*Concentration 1'/25 cu.ft.*
0	80.0	98.5
1	85.5	100.0
2	69.0	....
4	95.0	100.0
8	87.0	92.5
18	86.0	100.0
49	18.0	43.0

Free sparks and dirt have been eliminated by placing the cord in a dispenser container and passing the vapor through a screen or perforated plate. In addition specially designed baffles are used in the package. Comparative trials (Table 9) show that the screens caused no measurable reduction in the toxicity of the vapor.

Table No. 9

Effect of Filtering Vapor

Test Conditions: Dosage 1 ft.-100 cu. ft./30 minutes

Container Vent	*Total Flies*	*Per Cent Knockdown*		*Per Cent Kill (24 Hr.)*
		Immed.	*+30 Min.*	
Open	68	63.0	98.5	100
#40 Screen	70	36.0	84.5	100
#50 Screen	64	42.0	86.0	100
#60 Screen	71	28.5	92.0	100

Extensive experience has demonstrated that the immediate knockdown is usually subject to greater error than later observations.

Vapor Toxicity to Bedbugs

ALTHOUGH laboratory tests here have been restricted because of the difficulty in obtaining satisfactory test specimens in quantity, the toxicity of vaporized DDT to the bedbug, *Cimex lectularius* L., has been demonstrated. Adults were collected and exposed 2 to 3 days after feeding. The insects were not chilled for handling and in all tests blotting paper discs were provided in the shallow containers as a place of hiding. The results of the exposures are given in Table No. 10.

Table No. 10

Bedbug Exposures to DDT

Test Conditions: Exposure Period of 20 minutes

Concentration	*Per Cent Kill*		
	After 24 Hrs.	*After 48 Hrs.*	*After 72 Hrs.*
1 ft.- 50 cu. ft.	..	77	100
1 ft.- 60 cu. ft.	10	65	100
1 ft.-100 cu. ft.	10	40	87
Control	0	0	0

In other trials to determine the effect of the residual deposit, bedbugs were placed in containers (of different

(*Turn to Page* 161)

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Considerations in

EVALUATING GERMICIDES

By Paul A. Wolf*

Biochemical Research Laboratories
The Dow Chemical Company

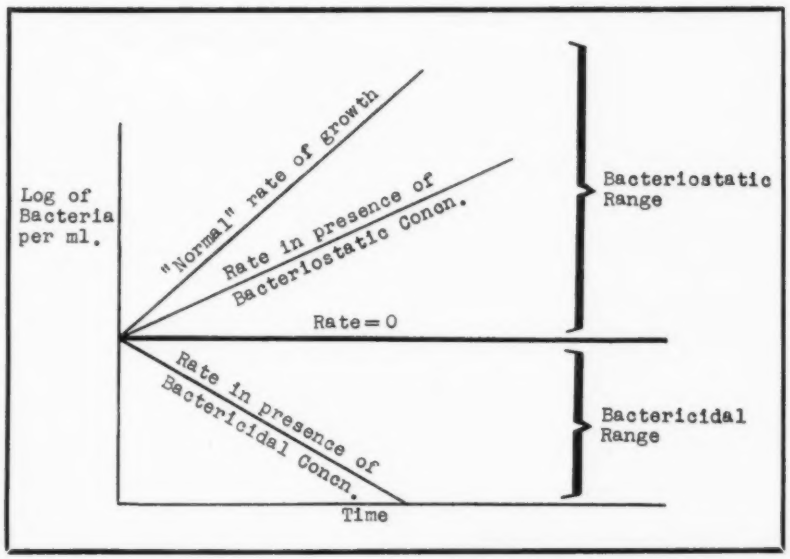
REQUESTS marked "Please send me a sample of your product having a phenol coefficient of 5" are probably quite familiar to those in the disinfectant business. Frequently this is the only information that the laboratory man receives and it sometimes seems that he is expected, with this limited information, to furnish a disinfectant formulation to fit any and all needs.

It is too often not appreciated that the phenol coefficient of a formulation, although an important consideration, is but one factor in the evaluation of a disinfectant. And furthermore, that to order or supply a formulation on the basis of a phenol coefficient alone is analagous to sending in an order to a mail order house marked "Please send me one brown suit." Germicides, like suits, can and must be tailored to fit the customer or end use in order to do an adequate job.

Since certain words such as antiseptic, disinfectant, and formulation are sometimes rather loosely used, it will be profitable to define some of these terms. **A. M. Patterson** (1) an authority on nomenclature has defined and clarified many of these terms, which are sometimes used rather indiscriminately.

Germicide: "Anything that destroys microorganisms ;applied especially to agents that kill disease germs." In practice it is assumed that a germicide will kill all ordinary disease germs but not necessarily bacterial spores. Microorganisms other than bacteria may also be killed, e.g. fungi, yeasts.

Antiseptic: "A substance that opposes sepsis, putrefaction or decay; one that prevents or arrests the growth or action of microorganisms, either by inhibiting their activity or by destroying them; used especially of agents applied to living tissue."



Disinfectant: "An agent that frees from infection, usually a chemical agent which destroys disease germs or other harmful microorganisms (but not, ordinarily, bacterial spores); commonly used of substances applied to inanimate objects."

Sterilize: "To render free from *all* living microorganisms."

The relationship between antiseptic or bacteriostatic action and disinfectant or bactericidal action has been illustrated graphically by Marshall and Hrenoff (2). They relate the concentration of germicide to bacterial growth as in the above chart. According to the authors' concept any rate of bacterial multiplication greater than zero but less than normal takes place in the presence of a bacteriostatic agent. However when the rate of multiplication becomes less than zero the organisms are dying faster than they are multiplying and bactericidal action occurs. This concept makes it understandable how the action of a germicide may be either inhibitory or bactericidal depending upon the concentration of the germicide with which one is working.

In order to evaluate better the factors other than germicidal test methods which enter into the appraisement of a bacteriostat or bactericide an understanding is desirable of the possible mechanisms of killing of bacteria.

Dubos (3) and Waksman (4) have excellent treatises on the mechanism of antibacterial action. Broadly speaking they indicate that the following types of reactions can either cause bacterial inhibition or cause the death of bacterial cells.

* Before Natl. Assn. Insecticide & Disinfectant Mfgrs., French Lick, Ind., June 19, 1945.

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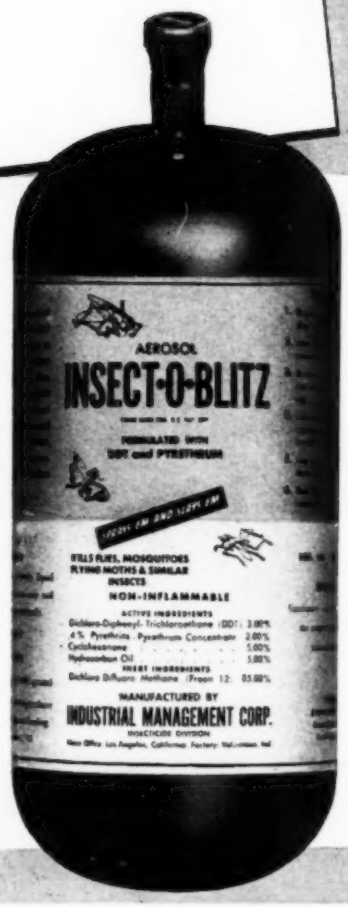

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Tell your customers how *safe* it is. When used as directed, INSECT-O-BLITZ is absolutely harmless. It's *non-inflammable... non-explosive.*

Tell your customers how *easy* it is to use. It takes only four seconds to spray the average 1000 cubic foot room with INSECT-O-BLITZ. When not in use, the self-spraying steel dispenser is sealed. There's no waste ..nothing to fill or spill... to mix or pump. INSECT-O-BLITZ is always ready and stays that way.

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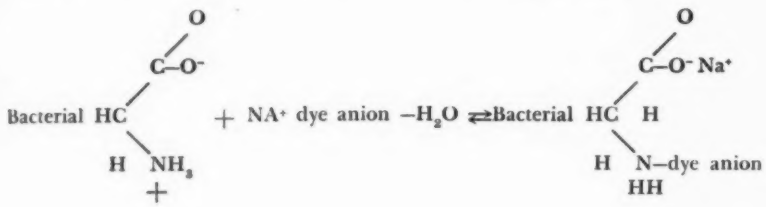
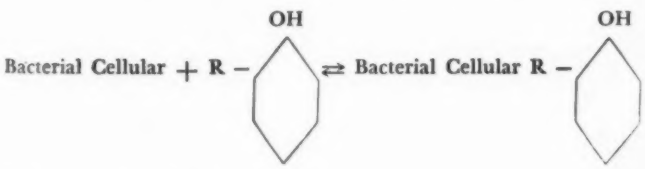
Ions such as Na^+ or K^+ are only weakly absorbed or reactive with the bacterial cell and are hence not relatively toxic. On the other hand ions such as H^+, Pb^{++}, Ag^+, or Hg^{++} are readily absorbed and probably reactive with cell constituents and are therefore toxic. It is interesting in this respect that the electron microscope has revealed the presence of Ag^+ and Pb^{++} within the bacterial cell wall, Mudd and Anderson (5).

Among the reactive groups of cellular material are the carboxylic acid groups of organic acids, the amino groups of amino acids joined in chains to form proteins, and the thiol group available in the sulfur-containing amino acids. In addition, surface active agents such as dyes, cationic detergents or soaps may be adsorbed to the cell through colloidal attraction. Possible reactions can be illustrated as follows:



Bacterial Cellular R–SH + Hg^{++} ⇄ Bacterial Cellular R–S–Hg–SH



The last mechanism may involve a reaction between amine groups of the bacterial cell and the phenol.

Since the above reactions are reversible, the bacterial organism may be "revived" if conditions are such for this to take place. From a practical standpoint it becomes important for the disinfectant manufacturer to know the conditions under which the germicide he is using may be inactivated and to take adequate precautions against this possible reversal or inactivation.

2. Inhibition of bacterial multiplication and ultimately death may be brought about by an antibacterial agent interfering with essential metabolic processes.

In many instances antiseptics, and particularly antibiotics fall in this category. This mechanism can be illustrated in the following manner: A + B ⇄ AB is an essential step in the metabolic functions of the bacterial cell. However, antibacterial C may react with A ⇄ AC, thus blocking the formation of adequate amounts of AB for normal metabolism. As a result the bacterial cell fails to multiply.

The reversal of the reactions entering into this second category is in general more easily effected than those reactions previously mentioned.

In order to emphasize further the importance for the manufacturer of germicides to evaluate the over-all properties required of his product in a particular application, let us consider some of the requirements of a typical antiseptic on one hand and a disinfectant on the other.

Antiseptic and Disinfectant Requirements

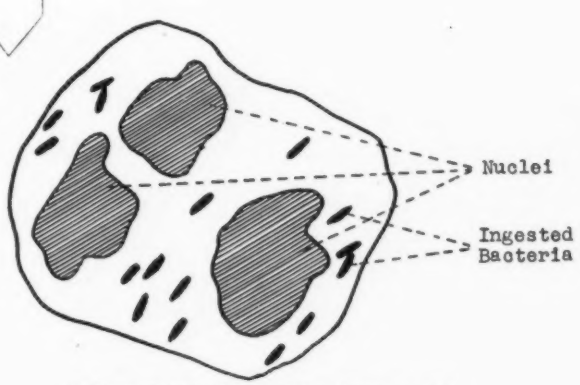
(a) *Bacteriostatic versus bactericidal action.*

SINCE antiseptics are by definition associated in use with animate objects, bacterial inhibition and not necessarily a bactericidal action is required. The polynuclear leucocytes (pus cells) act as phagocytes in destroying or ingesting the harmful invading bacteria, provided the bacteria do not multiply too rapidly. This action is illustrated below.

In contrast to the bacteriostatic properties required of an antiseptic, disinfectants must be bactericidal, since they are used on inanimate objects and secondary forces are not always available to help in combatting invading organisms.

Differences in the requirements of antiseptics and disinfectants with regard to skin irritation, interference by blood serum or other organic matter, and inactivation by detergents are evident. But again a careful evaluation of the conditions of use is important in deciding the efficacy of the germicide in question.

The effect of pH upon the germicidal action of a compound is many times overlooked in an evaluation of the compound. Obviously an



Polynuclear leucocyte (pus cell)

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3. *Effectiveness*—Rapid knockdown—equivalent to the OTI—plus 100% kill. Controls flies, bedbugs, silverfish, cockroaches, mosquitoes, moths, sand flies, gnats, etc.

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antiseptic should have maximum effectiveness at the pH range characteristic of skin and blood. On the other hand, it may be desirable to have a disinfectant with maximum activity in a distinctly acid range, as, for example, in the dairy trade where an acid environment inhibits the growth of proteolytic bacteria which cause foul odors. In the latter case, a phoenol coefficient based upon a value obtained upon an alkaline formulation might be grossly in error. A comparison of the phenol coefficient of 2,4,6-trichlorophenol at different pH's can serve as an illustration of this point.

2,4,6-Trichlorophenol
Effect of pH on Critical Killing Dilution

Organism	*Killing Dilution, 5-10 min.* pH 6.0	pH 10.0
S. aureus	1:1500	1:100

ANOTHER factor to be considered in the over-all evaluation of a germicide is the relationship of its concentration to the death rate of organisms exposed to the various killing dilutions of the germicide. In some cases, e.g., staphylococci exposed to HCl, the death rate may be proportional to the square root of the concentration. Only when the so-called concentration exponent is equal to one is the death rate directly proportional to the concentration. The significance of the relationship between the death rate and germicidal concentration will be more clear after considering the following specific examples from Rahn (6):

Germicide	*Concn.*
Formaldehyde	0.7%
Phenol	0.7%
Formaldehyde	1.4%
Phenol	1.4%
Formaldehyde	0.35%
Phenol	0.35%

The concentration exponent of formaldehyde is about one, while that for phenol is roughly 6. It can be seen from this table that by doubling the formaldehyde concentration the killing time is reduced to half of its original value, while the killing time of the phenol is reduced to $100/2^6$, or 1.6 minutes. The reverse relationship holds when the two germicides are diluted.

From the practical standpoint this means that the disinfectant manufacturer should be familiar with the effect of dilution on the killing rate of the germicide he is selling in order to be able to make recommendations for various uses of his product and to maintain proper safety factors.

THE antibacterial specificity of a germicide is another important factor to consider in an antiseptic or a disinfectant formulation. Too many people assume that a product with a phenol coefficient of 5 versus *Eberthella typhosa* can be used with equal results in any situation. This, of course, is not true. Since uses may arise in which certain types of microorganisms are predominant and require killing, it is vital that the manufacturer have an idea as to what his product will do against any given group of trouble-makers. Knowledge of the bacterial spectrum of his product is particularly important in cases of many of the highly potent germicides, for marked differences in killing power arise when different bacterial species are tested.

After having discussed the considerations other than the germicidal test procedure itself, the writer does not want to leave the impression that the test procedure is not important, but rather that it is a very important factor among several involved in the over-all consideration of a product.

The phenol coefficient has served a purpose for many years and will continue to do so, but the limitations of the method must be appre-

Organism	*Killing time (min.)*	
E. coli	100	
E. coli	100	
E. coli	50	$(100/2^1)$
E. coli	1.6	$(100/2^6)$
E. coli	200	$(100/0.5^1)$
E. coli	6400	$(100/0.5^6)$

ciated by those using it as a yardstick in measuring the efficacy of their products. For example, the phenol coefficient was originally intended for evaluating phenols and certainly should be limited to this class of compounds or at least to germicides which act similarly in their bactericidal mechanisms.

In the final analysis, the use anticipated for the product determines the properties required; and a test method which most nearly simulates these end uses is most desirable although not always possible. However, the fact that many of the newer methods now being published (7,8,9,10) involve techniques similar to those encountered under "use" conditions bears out the contention that more and more the laboratory worker is turning from the theoretical to the practical in the matter of germicide evaluation.

Summary

IN SUMMARY, the ideal evaluation of a new germicide would involve, in the writer's opinion: (1) a preliminary germicidal potency test, either a phenol coefficient technique depending on the nature of the compound or a determination of the killing time of the compound at different concentrations (with the test dilutions separated widely enough to be commensurate with the reproducibility of the test procedure); (2) follow-up studies of the effect of such factors as pH, organic matter, bacteriostatic versus bactericidal action, organism specificity, so-called concentration coefficient and possible neutralizing agents upon the germicide. These studies are to be tempered in all cases by the application that the manufacturer wants to make of his product.

When this over-all evaluation is appreciated fully, it can easily be seen that the disinfectant manufacturer can fulfill the needs of his customer, not by selling a product on the basis of its phenol coefficient or killing dilution alone, but by giving his customer an over-all picture of his product. Truly then, and only then, can the germicide be fitted to do an adequate job in the contemplated use.

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(*Turn to Page* 153)

3 DDT Preparations for the Insecticide Manufacturer

Today Penn Salt technicians are applying just as much effort and skill to the development of DDT as they did during the war. Only now their products are for all of us to use, and their purpose is not the stamping out of typhus in Italy but the controlling of insect pests here at home. A number of new preparations have recently been put on the market which are designed for the use of manufacturers creating their own formulations for domestic and farm insecticides. Here are three which may be just what you are looking for:

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PENCO SOLVENT CONCENTRATE

—a specially developed concentrate designed for use by insecticide manufacturers who do not desire to work from technical DDT. This product can be used for the manufacture of insect sprays.

PENCO DDT-TECHNICAL

—a fine to medium white granulated powder. It has a setting point of not less than 89° C. PENCO DDT-TECHNICAL is used by insecticide manufacturers who make their own formulations of DDT concentrates and finished products.

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PENCO CATTLE SPRAY—a dry wettable powder containing 50% DDT which is stable in water suspensions.

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Effect of Storage on INSECT REPELLENTS

By Howard A. Jones, George T. McCollough, and Fred A. Morton

Bureau of Entomology and Plant Quarantine*
U. D. D. A.

THE use of dimethyl phthalate, 2-ethyl-1,3-hexanediol ("Rutgers 612"), and *n*-butyl mesityl oxide oxalate ("Indalone") as mosquito repellents has been described (*1*). Mixtures of these substances have also been found to be highly effective insect repellents (*1, 3*). One of these mixtures, widely used by the armed forces, is the so-called 6-2-2 mixture or 60-20-20 mixture, comprising 60 per cent of dimethyl phthalate, 20 per cent of "Rutgers 612," and 20 per cent of "Indalone." Another mixture which gave promising results in early work contains 80 per cent of dimethyl phthalate and 20 per cent of "Rutgers 612" (called the 80-20 mixture). To determine the effect of storage on the repellent value of such materials, these mixtures were stored under various conditions for 8 months and then compared with freshly prepared mixtures of the same materials.

The mixtures were prepared from given lots of the repellents by mixing at 30°C. The refractive index at 34° was 1.4887 for the 60-20-20 mixture and 1.4950 for the 80-20 mixture. These combinations were divided into several subsamples, which were stored in amber-glass bottles, pyrex-glass flasks, and tinned-metal cans at room temperature and in a constant-temperature oven at 60°; in amber glass bottles and in pyrex-glass flasks placed outdoors in sunlight; and in tinned-metal cans placed in the freezing unit of a refrigerator. The amber-glass bottles were closed with plastic caps having cork liners, the metal cans with metal screw caps with cork liners, and the pyrex flasks with rubber stoppers.

The mixtures were stored for 8 months (October to June). At the end of this time fresh mixtures were prepared from the same lots of individual repellents that were used to prepare the original samples. The refractive

* This work was conducted under a transfer of funds, recommended by the Committee on Medical Research, from the Office of Scientific Research and Development to the Bureau of Entomology and Plant Quarantine. Mr. Jones is now with the Unit of Entomological Research of Dodge & Olcott, Inc., Baltimore, Maryland. George T. McCollough is Sergeant, AUS, assigned from Army Air Forces Committee on Aerial Dispersal of Insecticides at Army Air Forces Center, Orlando, Fla.

Table 1
Effect of Storage Under Various Conditions on 60-20-20 and 80-20 Repellent Mixtures

					60-20-20 *Mixture*				80-20 *Mixture*			
	Color		*Refractive Index*		*Aedes aegypti*		*Anopheles Quadrimaculatus*		*Aedes aegypti*		*Anopheles Quadrimaculatus*	
Condition of Storage	60-20-20 *Mixture*	80-20 *Mixture*	60-20-20 *Mixture*	80-20 *Mixture*	*Time to First Bite**	*Difference from Freshly Prepared Sample*	*Time to First Bite**	*Difference from Freshly Prepared Sample*	*Time to First Bite**	*Difference from Freshly Prepared Sample*	*Time to First Bite**	*Difference from Freshly Prepared Sample*
At room temperature					*Minutes*		*Minutes*		*Minutes*		*Minutes*	
Amber-glass bottles	Very light yellow	Colorless	1.4876	1.4945	285	+ 6	123	—96	239	+21	185	+ 27
Pyrex-glass flasks	Very light yellow	Colorless	1.4878	1.4952	238	— 9	129	—28	291	—13	153	— 16
Tinned-metal cans	Deep amber red	Colorless	1.4869	1.4950	174	—69	64	—24	280	—29	150	+ 29
Oven at 60°C.:												
Amber-glass bottles	Very light yellow	Faint Yellow (almost colorless)	1.4940	1.4957	281	+23	79	—79	196	+ 4	110	+ 43
Pyrex-glass flasks†	Deep amber red	Deep amber red (almost opaque)	1.4936	1.5028	232	+ 3	71	—51	304	— 5	49	—116
Tinned-metal cans	Very deep amber red (almost opaque)	Light yellow	1.4950	1.4964	177	—73	38	—34	287	— 6	179	+ 16
Sunlight (outdoors):	Very light yellow	Colorless	1.4873	1.4950	232	—60	134	—117	296	—23	75	+ 11
Amber-glass bottles	Faint yellow (almost colorless)	Faint Yellow	1.4954	1.4872	320	+24	133	+ 6	282	—20	178	— 17
Pyrex-glass flasks												
Freezing unit of refrigerator, tinned-metal cans	Light yellow	Colorless	1.4878	1.4952	291	+33	125	+40	248	—19	164	+ 23
Freshly prepared mixture	Light yellow	Colorless	1.4887	1.4950	..	..	..	..	..	..	..	..
Standard error of difference	..	..	..	..	..	31	..	46	..	34	..	49
Least significant difference	..	..	..	..	..	65	..	95	..	68	..	98

* Average of 4 paired tests. † Contaminated by rubber stopper.

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indices of these samples agreed with those of the original samples at the time they were prepared.

Observations were made of the color and refractive index of all samples. The repellent values of the stored samples against *Aedes aegypti* (L.) and *Anopheles quadrimaculatus* Say were determined in paired tests with the freshly prepared mixtures. Each pair of tests was conducted on the arms of one subject. Both arms were exposed at the same time and in the same cage of mosquitoes.

Results obtained with the 60-20-20 and the 80-20 mixtures are shown in table 1. An analysis was made of the variation of differences between each of the stored samples and their checks. From this analysis the standard error of difference and the least significant difference were calculated†

The 60-20-20 mixture appeared to be affected by storage in metal cans both at room temperature and at 60°C. At 60° the mixture in the metal cans had become almost opaque, and even at room temperature a marked color change was noticeable. These two samples were the only ones in this series that showed a definite decrease in repellent value against *Aedes aegypti*. Results against *Anopheles quadrimaculatus* were erratic.

Storage at high temperature alone apparently had no effect on the repellency of the 60-20-20 mixture, as the samples stored at 60°C. in amber-glass bottles and in Pyrex (even though contaminated) showed no loss in repellent value.

Under certain conditions the 60-20-20 mixture actually became lighter in color on storage. The sample kept in Pyrex in sunlight was most marked in this respect, becoming almost colorless. Other samples stored at room temperature and at 60°C. also showed this effect. This change, however, was not accompanied by any change in repellent value. In this connection, Hall *et al.* (2) have shown that "Indalone" exposed to sunlight is quantitatively polymerized to produce a dimer of "Indalone."

The 80-20 mixture appeared to be affected very little by the conditions of storage used. No loss in repellent value to *Aedes aegypti* was indicated under any of the storage conditions. The sample stored in Pyrex at 60°C. showed definite loss in repellency to *Anopheles quadrimaculatus*, but this may have been due to the contamination from the rubber stopper or some other unknown cause.

† The statistical interpretation of the data was developed by F. M. Wadley of this bureau.

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WFO 42b Being Terminated

As we close our final pages for press, a report has been received from Washington that WFO 42b, the order controlling the use of fats and oils in soap making, was to be terminated October 19. This would free soap makers from quota controls that have been in effect since shortly after the start of the war. Price controls would still remain in effect. It is believed to be part of the OPA program to keep price controls in effect on inedible fats and oils and on soaps for some time to come, in spite of the fact that price ceilings have been removed from edible oils. The OPA Soap Industry Advisory Committee was scheduled to meet in Washington, October 21.

EVALUATING GERMICIDES

(*From Page* 149)

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Pest Control in Soil

A soil disinfecting composition consists of a finely divided, free-flowing product containing 1-phenyl-2-nitroethylene admixed with a solid diluent. W. H. Tisdale, to Canadian Industries Ltd. Canadian Patent No. 435,952.

ANTU PROGRESS REPORT

(*From Page* 137)

Finally, the experience of Baltimore is in itself ample proof of the efficiency and relative safety of ANTU. Nathan L. Smith, chief engineer, Department of Public Works, Baltimore, reports:

"The local plan provides for trapping, gassing and poisoning to effect extermination. Live trapped rats are supplied to the Johns Hopkins University — School of Hygiene and Public Health for experimental purposes in exchange for entire ANTU poison requirements. Unpaid citizen volunteers are enlisted, organized, instructed, supplied with poisoned bait and supervised, and their work is coordinated under municipal direction with the city services of eliminating rats by blocks adjacent to each other, expanding the operations to eventually complete coverage of the entire city, and permanently controlling infestations after original treatments of the areas. Trapping and Cynogas operations are performed by city employees only.

"Since the inception of the program in October, 1942, and to June 30, 1946, 5,574 city blocks have been treated and placed under permanent control (requiring retreatment), which resulted in the destruction of 279,646 rats by actual count. It is believed that at least an equal number died under ground or in inaccessible places. During that period, the Rodent Control Division of the Bureau of Street Cleaning, which conducts the program, received 13,288 letters and telephone calls requesting relief; 124,973 pounds of bait and 3,804 pounds of ANTU poison were used. Generally, standard grains were used for bait in combination with ANTU poison, and original treatments of areas reduced the rat population by 90 per cent. The success of the program rests considerably on the activities of unpaid citizen volunteers, numbering over 2,000 as of June 30, 1946."

In the opinion of several government agencies, especially those concerned with food, now is the time to emphasize rat control, for the advent of ANTU lends new significance to intensive control campaigns, makes possible the reduction of the rat problem to a minor position.

The American public has been spending upwards of $10,000,000 a year to fight rats with indifferent success. ANTU should change this picture drastically. When it becomes well known that a dependable raticide exists, it is a safe bet that interest in rat control will increase markedly and the demand for poisons be multiplied several times.

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Determination of Pyrethrins Deterioration

By W. A. Gersdorff and W. F. Barthel
Bureau of Entomology and Plant Quarantine, U.S.D.A.

The solubility of pyrethrum concentrates in dichlorodifluoromethane as a measure of their deterioration in insecticidal effectiveness

IN the course of work on the preparation of purified pyrethrum concentrates, it was found that partly polymerized or altered samples of pyrethrum were no longer completely soluble in dichlorodifluoromethane. It was thought that the relative amount of material insoluble in this solvent might be used as a criterion of the deterioration of highly concentrated pyrethrum preparations.

To study this question, samples of a pyrethrum concentrate (approximately 100 per cent pyrethrins[1]) purified by the nitromethane-charcoal process (1) and, for comparison, a commercial 20 per cent concentrate were stored for six months. In addition, samples of the purified concentrate, one containing 0.1 per cent of hydroquinone and one diluted with deodorized kerosene to contain about 12 per cent of pyrethrins, were also stored to determine whether these treatments would have any effect on the keeping quality of the pyrethrins. Each sample was stored at three temperatures—2° C., room temperature, and 40° C. The samples stored at 2° and 40° were kept in bottles in the dark; those at room temperature in clear-glass bottles in the light but not in direct sunlight. At intervals during the storage period portions of the samples were examined for their solubility in dichlorodifluoromethane to check on any rapid polymerization. At the end of the storage period, in addition to the solubility tests, toxicity tests were made to establish any possible correlation between the two methods of measuring deterioration. The results of these tests are given in table 1.

The solubilities were determined by the method of Goodhue (unpublished work) which, because of its simplicity and precision, is well suited for this purpose. The toxicity tests were made by the turntable method on adult houseflies, *Musca domestica* L., reared by standard procedure. Sprays were made of the materials in deodorized kerosene at a concentration of 2 mg. of pyrethrins per milliliter, calculated on the original basis. When necessary these sprays were filtered to remove the insoluble material. As standards of comparison, sprays of a pyrethrum-kerosene extract were also tested. Knock-down and mortality percentages were determined in 11 replicates with approximately 150 flies to each test.

The solubility tests made at intervals showed only negligible amounts of insoluble material in most of the samples. In the 100 per cent pyrethrins concentrate, when held at room temperature the amount of soluble material was 81 per cent after 115 days' storage; when held at 40° the amount

Table 1
Solubility of Pyrethrum Concentrates in Dichlorodifluoromethane and Their Toxicity to Houseflies After 170 Days' Storage

Materials	*Storage Temperature*	*Solubility**	*Mortality† in 1 Day*
	°C.	*Per Cent*	*Per Cent*
Concentrate (100% pyrethrins)	2	99	50
	room	‡	28
	40	‡	7
Same plus hydroquinone 0.1%	2	98	49
	room	98	55
	40	98	51
Same, diluted with kerosene to 11.7% pyrethrins	2	99	45
	room	99	38
	40	99	40
Commercial 20% concentrate	2	99	48
	room	80	40
	40	71	32
Standard pyrethrum extract	..	..	23
	..	..	47

* $100 - \frac{\text{Weight of insoluble materials} \times 100}{\text{Weight of pyrethrins}}$

† The concentration of the test sprays was 2 mg. of "pyrethrins" (original basis) per milliliter of kerosene, with the exception of the first standard spray in which it was 1 mg. per milliliter. Least significant difference at odds of 19 to 1 is 8 per cent.

‡ These samples had decomposed so much that it was impossible to determine solubility by the method used.

[1] In this paper the term "pyrethrins" refers to "total pyrethrins" as determined by the official A.O.A.C. method. This mixture is now known to contain the related cinerins as well as pyrethrins (F. B. La Forge and W. F. Barthel, unpublished work).

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of soluble material was 94 per cent after 16 days, 82 per cent after 39 days, and in 115 days the sample had decomposed so much that it was no longer possible to determine solubility by the method used. In the commercial 20 per cent concentrate, the amount of soluble material was 92 per cent after 115 days at room temperature; when held at 40° the amount of soluble material was 91 per cent after 39 days and 77 per cent after 115 days.

Because circumstances prevented the running of toxicity tests on the original samples before storage, the comparison of those portions of the samples held under the best storage conditions at 2° C. in the dark was made with the standard pyrethrum extract. According to this comparison there was no loss in toxicity in any of the materials when stored under these conditions.

The concentrates containing hydroquinone all gave high mortalities as compared with those obtained with pyrethrum extract, and the concentrates containing kerosene gave low mortalities, each group showing no significant difference within it. The difference between these two groups was ascribed to the difficulty of handling and analyzing the original samples, although it is possible that the hydroquinone caused a slight increase in toxicity of the sprays containing it. Therefore, in each group the portions of the four samples held at 40° C. and room temperature should be compared with the portion held at 2° C.

When kept at higher temperatures without the presence of an inhibitor, the materials tended to lose toxicity, and this loss was much greater in the 100 per cent pyrethrins sample than in the less concentrated materials. Hydroquinone and kerosene, however, each inhibited loss of toxicity in this concentrate. The loss of toxicity in the commercial 20 per cent concentrate was on the border line of significance at room temperature and highly significant at 40° C.

So far as these tests indicate, solubility of the materials in dichlorodifluoromethane is a suitable index of the retention of toxicity. The samples held at 2° C. agreed very well in toxicity with the standard, even after 170 days, and showed also but negligible amounts of insoluble matter. In the tests with the 100 per cent concentrate at the higher temperatures, formation of considerable insoluble material was accompanied by a corresponding loss in toxicity.

The 20 per cent concentrate stored at 2° C. and the pyrethrum extract caused equivalent mortalities at a "pyrethrins" concentration of 2 mg. per milliliter. The concentrations corresponding to the mortalities may be estimated for this concentrate stored at room temperature and at 40° by comparison of the mortalities with the curve that may be drawn for the pyrethrum extract. The percentages of pyrethrins retained were found to be 83 ± 5 and 67 ± 5, respectively, as compared with 80 and 71 by the solubility method.

As was to be expected, the only material giving less than complete knock-down at the concentrations used in the sprays was one showing much decomposition—the 100 per cent concentrate stored at 40° C.

Summary

A PURIFIED pyrethrum concentrate (100 per cent pyrethrins), alone and with the addition of 0.1 per cent of hydroquinone, a sample diluted with deodorized kerosene to contain about 12 per cent of pyrethrins, and a commercial 20 per cent concentrate were held in storage in the dark at 2° and 40° C. and in the light (but not direct sunlight) at room temperature. Periodical examinations were made for polymerization by determining the solubility of the samples in dichlorodifluoromethane. At the end of 170 days the toxicity of the samples to houseflies, *Musca domestica* L., was determined by the turntable method.

There was no loss in toxicity in any of the materials when stored in the dark at 2° C. At higher temperatures, without the presence of an inhibitor, the materials tended to lose toxicity, and this loss was much greater in the samples of 100 per cent pyrethrins than in the less concentrated materials.

Hydroquinone in a concentration of 0.1 per cent proved to be a good inhibitor of loss of toxicity in this concentrate. Deodorized kerosene when used as a diluent also inhibited loss of toxicity.

A commercial 20 per cent concentrate showed considerable deterioration in 170 days at room temperature and still more at 40° C.

Solubility in dichlorodifluoromethane proved to be a good guide to deterioration in these pyrethrum samples.

Literature Cited

(1) Barthel, W. F., Haller, H. L., and LaForge, F. B. Pyrethrins for aerosols. The preparation of 98% pure pyrethrins for use in Freon aerosol bombs. *Soap and Sanit. Chem.* 20 (7): 121, 135. 1944.

Lice on Body and Hair

One ounce of a powder containing 10 per cent DDT in pyrophyllite or talc applied over the inner surface of underclothing, and an additional 0.5-1 ounce to the seams of the outer garments is a most satisfactory method of eradicating the body louse.

While this powder is effective against the head louse, a liquid material called "NBIN" is preferred. This concentrate consists of 68 per cent benzyl benzoate, 14 per cent sorbitan monooleate polyoxy-alkylene ether derivative, 12 per cent benzocaine, and 6 per cent DDT. An emulsion of 1 part in 5 parts of water will kill all lice and eggs in the hair provided the hair is at least moistened throughout. Either the powder or the NBIN formula is effective against the crab louse. The lice are eradicated by 2 applications of the powder 8 days apart or by 1 application of the NBIN formula. G. W. Eddy and R. C. Bushland. *U. S. Dept. Agr. Bur. Entomol. Plant Quarantine* E-685, 5 pp. (1946).

Complex Insecticide

A 5 per cent solution of 1,1-bis (para-chlorophenyl)-2-nitroethane is particularly effective against filies. The material can also be applied in aqueous emulsions in which the insecticidal properties do not diminish on long standing. P. Juller, to J. R. Geigy A.-G. U. S. Patent No. 2,397,802.

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Insecticidal Composition

A mixture containing 0.2-2 per cent of an insect poison, 95-80 per cent of a lower monohydric alcohol, and 5-20 per cent of a light petroleum oil, is claimed as an insecticide especially for application to the skin of man and domestic animals. The insect poison may be pyrethrins, rotenone-containing materials or active resins such as derris. The alcohol may be ethyl or isopropyl alcohol. A petroleum distillate boiling at 204-260°C. is suitable. This mixture is said to control mange, ticks, lice, and fleas without irritating the skin or leaving an oily or greasy film on it. The high insecticidal potency is apparently due to the combined solvent effect of the hydrocarbon-alcohol mixture on the exoskeleton of mites and insects and to penetration of the shorion of insect eggs. O. E. McKim, to Stanco Inc. U. S. Patent No. 2,396,054.

Athletes' Food Treatment

Epidermophyton floccosum is the most frequently encountered fungus causing athletes' foot. *Trichophyton rubrum,* formerly limited to tropical regions, now accounts for 29 per cent of current cases in England. Clinical diagnosis is confirmed by microscopic examination, which in turn is checked by the cultivation and identification of the causative fungus. A remedy frequently used is Castellani's fuchsin paint, prepared as follows: Mix 10 cc. of a saturated alcoholic solution of basic fuchsin with 100 cc. of a 5 per cent phenol solution and filter. To the filtrate add 1 gram of boric acid, let stand two hours, then add 5 cc. of acetone. Let stand two hours and add 10 grams of resorcinol. This is put up in glass-stoppered, dark colored bottles. *The Pharm. J.* pp. 8-9, July 6, 1946.

Roach Control Studies

Numerous reports of the ineffectiveness of sodium fluoride in controlling roaches in the home have been received recently by the Purdue Agricultural Experiment Station. Investigation of complaints, according to Dr. George E. Gould of the Purdue entomology department, has revealed that the method of application rather than the insecticide, was at fault. A light film of dust, applied to cracks and other hiding places, says Dr. Gould, in the Station's latest annual report, was more effective than a line or heavy film of the poison.

Reporting briefly on the Station's studies to determine more effective control measures for cockroaches, it was found that an impalpable grade of sodium silico-fluoride was an excellent substitute for sodium fluoride. "The silico-fluoride required higher strength to get results comparable with the fluoride dust," continues the report. "Eleven different diluents tested with the silico-fluorides from the standpoint of improved kill and a reduction of irritation to the operator, were about equal in effectiveness and had little effect on the fluffiness of the mixture. The addition of 2 per cent light oil to the dust mixtures eliminated much of the irritation."

Pyrethrum marc was tested in many combinations to determine if it has any value in roach control. By itself, the report states, marc has an extremely low toxicity with little activating effect on low dilutions of solium fluoride even in the presence of diluents. However, it was found that when mixed with equal parts of boric acid, marc improved both the kill and speed of action of boric acid. The boric acid was again better than borax and gave good results in certain tests.

DDT at low dilutions in dust form gave variable results but a good kill at 10 to 25 per cent strengths, the investigations showed. Dinitroanisole was effective as a dust, but the related compound, o-nitro-anisole, was "of no value." Two commercial mixtures, one containing a thiocyanate compound and the other a marc impregnated with nitrated hydrocarbon derivative, gave excellent results. Another mixture containing pyrethrum extract, dinitroanisole and isolutyl undecylin amide, "was quite effective."

Wax Polishes

Highly surface-active agents are added to mixtures of molten wax and emulsifying agent, to obtain superior water emulsions of relatively low viscosity. The amount of surface-active agent used is 0.1-2 per cent by weight of the resultant aqueous emulsion. One polish is prepared according to the following formula: No. 1 yellow carnauba wax 40 parts, oleic acid 8, morpholine 5, sodium octyl sulfate 1.5, and water 240 parts by weight. The wax and oleic acid are heated to 95-98°C. and the morpholine and wetting agent in 40 per cent aqueous solution added to the melt. The water, heated to 98-100°C., is then added quickly and the mixture stirred to yield a homogeneous dispersion. The product is self-polishing. H. E. Wassell, to Carbide and Carbon Chemicals Corp. U. S. Patent No. 2,395,025.

Insecticide-Fungicide

Ammonium aryl dithiocarbamate-formaldehyde reaction products are useful as insecticides and fungicides. For use in poisoned baits the material is combined with 50 parts of talc. A. D. Ainley and S. H. Davies, to Imperial Chem. Ind. Ltd. U. S. Patent No. 2,395,440.

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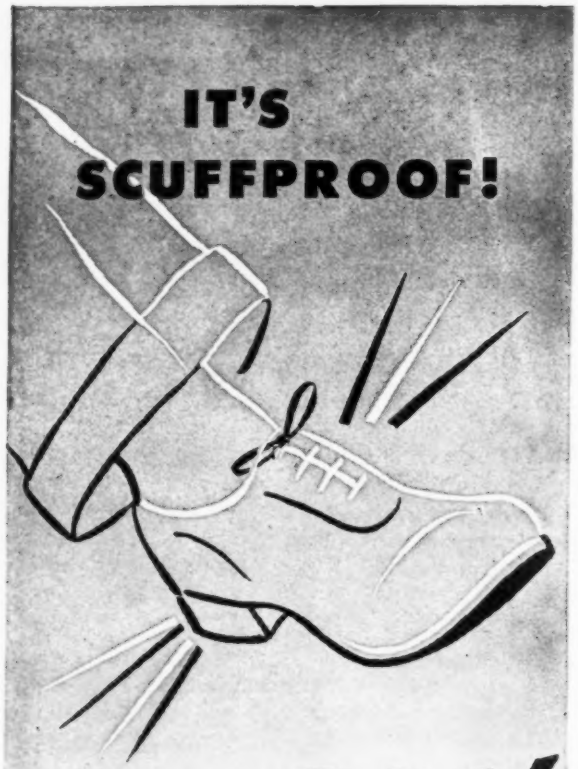

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DDT Comparative Toxicity

The approximate LD 50 for DDT in the cockroach is 5-8 mg./kg. when injected in acetone solution, 10 mg./kg. when applied to the body surface in acetone, 18 mg./kg. when injected as an aqueous emulsion, and 82 mg./kg. when injected in peanut oil. The approximate LD 50 for DDT applied to the body surface in acetone is 2 mg./kg. for the newly emerged housefly. For older, captured adults the LD 50 is about 8-21 mg./kg. for *M. domestica* and 9-28 mg./kg. for *Calliphora*.

The data of various investigators, using different methods, indicate that the LD 50 values for DDT for the adult captured fly, mosquito, cockroach, and various mammals including rat, rabbit, cat, dog and monkey, differ by a factor of only 3-5 when absorbed material is considered. Death, at doses of comparable toxicity, occurs more rapidly in the fly than in the cockroach.

The fact that the LD 50 by surface application is about the same as that by injection, in the cockroach, in sharp contrast to the relationship in mammals, implies extremely efficient absorption and distribution and suggests the basic reason for the excellence of DDT as an insecticide. Absorbability is the factor which differentiates the apparent toxicity of DDT for insects from that for mammals. J. M. Tobia, J. J. Kollros and J. Savit. *J. Pharmacol.* **86**, 287-93 (1946).

Synergism in Fly Sprays

A study was made of the toxicities toward houseflies (*Musca domestica L.*) of sixty-nine organic compounds of various types, all containing the methylene dioxyphenyl group in their structures. When tested in solution with a low concentration of added pyrethrins, most of the compounds were found to be relatively inactive or showed only a moderate degree of synergism. The more active compounds containing this group were reported in literature cited in the references. They were piperine, which is the principal alkaloid of black pepper (*Piper nigrum L.*), and other related N-substituted amides of piperic acid. It was concluded that the presence of a methylene dioxyphenyl group in the structure of a compound is not in itself a sufficient condition for insecticidal activity or for synergistic activity with pyrethrum. Prill and Synerholm. *Contributions from the Boyce Thompson Inst., 14*, 4. Apr.-Jun. 1946.

Quaternaries from Proteins

Surface-active agents of the quarternary ammonium type are prepared from proteins by degrading protein with alkali, treating the reactive amino groups so obtained with a halogen-substituted organic acid halide and converting this water-insoluble product into a water-soluble one by reaction with a tertiary amine in the absence of water. The hydrophobic properties of the protein can be enhanced by the reaction of some of the amino groups of the protein with long-chain alkyl or aryl sulfonyl or fatty acid halides, like $C_{17}H_{35}COCl$. Products with good detergent properties can be prepared in this manner. C. A. MacKenzie and L. Spialter, to Montclair Research Corp. U. S. Patent No. 2,398,317.

Insect Repellents

Organic acids, including hendecylenic, 2-ethylcaproic, caproic, pelargonic, and cyclohexanecarboxylic acids, are claimed as insect repellents. They may be used undiluted or dissolved in mineral oils, vegetable oils, or in various alcohols, incorporated in pastes or creams, or made into aqueous emulsions. Repellent power lasts much longer when the acids are applied to the clothing than to the skin. Chiggers, mosquitoes and other insects are repelled. Cyclohexyl, aryl, and substituted aryl compounds such as 2-cyclohexyl-cyclohexanol, 2-phenylcyclohexanol, and 2-para-tolylcyclohexanol, possess similar properties. H. A. Jones and B. V. Travis, to free use of the people of the U. S. A. U. S. Patents No. 2,396,012 and 2,396,013.

Pyrethrum Substitute

N - Butyl-3,6-endomethylene - 4 - cyclohexene-1,2-dicarboxylic imide is claimed especially as a substitute for the greater part of pyrethrum in kerosene-based fly sprays for use as a mosquito repellent, delousing agent, and contact poison for agricultural pests. W. C. McCrone. U. S. Patent No. 2,393,999.

Urge Testing Naphthalene

"Watch naphthalene for quality" the National Furniture Warehousemen's Association advised its members in the July issue of the organization's house organ, the *Furniture Warehouseman*. Although naphthalene is considered by the Association as "the most effective moth proofing material for the industry to consider," naphthalene of uniform quality is not always available, the article asserts.

"Many warehousemen," it continues, "have purchased barrels of naphthalene flakes that have been so low in quality as to have no value whatever." The Association has attempted to find a reliable method for testing the product for quality and Dept. of Agriculture specifications are outlined in the article. "It seems impractical," however, the article concludes, "for the average warehouseman to make the necessary tests."

Sheep Dip

No sheep ticks were found on sheep or goats dipped in a solution containing 0.2 per cent of DDT. This solution was made from a stock emulsion of 1 part of technical DDT in 5 parts by weight of soluble pine oil containing an emulsifier. C. S. Rude and H. E. Parish. U. S. Dept. Agr., Bur. Entomol. Plant Quarantine *E-679*, 2 pp. (1946).

INSECTICIDAL CURDS

(*From Page* 143)

materials) four days after the containers had been treated. These tests are summarized in Table 11. Three replicates constituted each test.

Table No. 11

Effect of Residual Deposit on Bedbugs

Test Conditions: Dosage 1 ft./30 cu. ft. for 40 minutes

Container Material	*Per Cent Kill*	
	After 24 *Hrs.*	*After* 48 *Hrs.*
Wood	66	100
Paper	67	100
Metal	100	100
Control	0	0

It is evident that bedbugs are susceptible to very small quantities of

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DDT applied by this method and that an effective residue is deposited. Later tests have confirmed the indication in Table No. 11 that the deposit on a hard smooth surface is more effective than on certain other surfaces. Although the length of exposure and vapor concentration required to kill bedbugs with DDT by this method or any other method is greater than that for houseflies, the typical steps in the cycle from nervous excitation through progressive paralysis and final collapse are just as clearly defined and the cycle is shortened by increase in exposure time and vapor concentration.

Effect of Vapor on Clothes Moth Larvae and Carpet Beetle Larvae

A NUMBER of tests were made on the clothes moth larvae (*Tineola bisselliella* Hum.) and the carpet beetle larvae (*Attagenus piceus* Oliv.) following the procedure outlined in ASTM D582-45T "Tentative Methods of Test for Resistance of Textile Fabrics and Yarns to Insect Pests"—"Fabric Loss Method."

The data of these tests are given in Table No. 12 and show that clothes moth parvae placed on cloth two weeks after it had been exposed to DDT vapor and incubated for 28 days were completely killed when the exposure had been at a concentration of 1 ft. to 30 cu. ft. A moderate amount of nap feeding had taken place and a few small holes were visible, the loss in weight being 3.5 per cent for the treated cloth sample against 21.6 per cent for the control. Similar treatment for the carpet beetle larvae showed all were alive after the incubation period but that only light nap feeding had taken place and no holes were visible, the feeding loss being reduced from 13.3 per cent for the control to no loss for the treated cloth.

Tests of Miscellaneous Insects

IN an effort to select an insect which is easily reared in the laboratory and whose dosage-mortality response is sufficiently similar to that of *Cimex lectularius* so that it could be used as a substitute for the bedbug, several species were exposed in an exploratory way. The following insects were found to be so resistant to treatment that it was not attempted to use them for substitution purposes: *Oncopeltus fasciatus* Dall, and *Periplanata americana* L. In limited tests *Cimex adjunctis* Garb., a bedbug infesting bats, demonstrated a response to DDT vapor similar to that of *C. Lectularius*, but this bedbug is just as difficult to obtain as those affecting man and their rearing would be even more of a nuisance.

Field Tests

A NUMBER of full scale trials have been carried out in various size public and private buildings under natural conditions. In several instances, the primary pests were the blue and greenbottle flies, *Lucilia* spp., with a few Polistes wasps: in other cases, the pests were houseflies and wasps; in still other trials, the primary pests were bedbugs with a variety of other insects present, including mosquitoes, fleas, silverfish, carpet beetles clothes moths, spiders and several fly species. In all these tests the cord was used at concentrations of 1 ft. to 50 or 60 cu. ft. space and the exposure time was two hours. Practically complete kills resulted in all trials.

When an inspection before treatment was made at a reported infestation, it was often difficult to find more than an occasional bedbug or a few bluebottle flies, but the first effect of DDT, nervous stimulation, brings forth from places of hiding many more insects than it was supposed were present. At examination two days after treatment, dead insects were found in abundance along the baseboards where they had dropped after crawling from cover and light-seeking insects were often found under the windows.

The lady-bug, *Adalia bipunctata* L. and certain other unidentified coccinellids were extremely abundant in several of the treated dwellings but they appeared to be largly unaffected by the DDT vapor or deposit.

The vapor has the characteristic odor of DDT which is readily removed by ventilation for an hour or two following the treatment.

Daily exposure to handling and testing of the cord for eighteen months has caused no skin irritation, rash nor other known toxic effects. Lengthy exposure to the vapor in high concentration causes irritation to the respiratory tract and may produce toxic effects characteristic of massive DDT ingestion or exposure.

Table No. 12

Effect of Residual Deposit on the Larvae of Clothes Moths and Carpet Beetles Cloth Exposure Period—90 Min. Larvae Entered After 14 Days, Held 28 Days

	Average Weight (Milligrams)			*Larvae*		*Visual Damage*	
Dosage	*Before Test*	*After Test*	*Adjusted Loss*	*Total No.*	*No. Alive After 28 Days*	*Fiber Cutting (% Est. Area)*	*Nap Feeding*
Humidity							
Control	314.0	311.8	..	..	..	..	
			Clothes Moth Larvae				
Feeding							
Control	304.2	236.8	65.2	10	10	16	Heavy
1-60	311.2	270.0	39.0	10	3	10	Heavy
1-40	279.8	230.0	47.9	10	5	13	Heavy
1-30	306.5	295.0	9.6	10	0	1	Moderate
			Carpet Beetle Larvae				
Feeding							
Control	307.3	264.3	40.8	10	10	14	Heavy
1-60	281.0	278.0	1.0	10	10	2	Moderate
1-42	295.5	293.5	None	10	10	2	Light
1-30	271.3	270.0	None	10	10	0	Light

Summary

WHEN a "Cordacide" dispenser containing a combustible cord in which DDT is incorporated is ignited, vapors are evolved which are highly toxic to insects. In the tests described, it has been found that vaporized DDT produced a complete knockdown of houseflies in a short time and leaves a residual deposit which is effective for long periods. Several other household pests have been effectively treated, and the method possesses distinct advantages for indoor space treatments.

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THE fourteenth annual convention of the National Pest Control Association will be held on Oct. 28, 29, and 30, 1946 at the Hotel Roosevelt, New Orleans. The program, released late last month by W. O. Buettner, secretary, and Theodore Oser, president, is highlighted by a symposium on rodent control, a paper and forum on postwar insect problems, a meeting on fumigation, and a discussion on industry problems. This year's general chairman J. Harvey Sturgeon and local chairman, Joe Mandlebaum are responsible for the program which is detailed below:

PROGRAM

(This program subject to slight changes prior to convention sessions.)

SUNDAY—OCT. 27

1:00 to 9:00 P.M.—Registration.

2:00 P.M.—Annual Meeting of the Board of Directors. No special activities planned for afternoon or evening. Informal Open House in President's-Secretary's Suite starting 8:30 P.M.

MONDAY MORNING—OCT. 28

9:00 A.M.—Meeting called to order—J. Harvey Sturgeon.
National Anthem—Walter Porter.
Invocation—Rabbi Emil W. Leipziger.
President's Annual Message—Theodore Oser.
Treasurer's Report — Robert C. Yeager.
Assistant Secretary's Report — Thomas H. Mahon.
Secretary's Report — William O. Buettner.
Memorial Service—H. K. Steckel.
Annual Reports — Regional Vice-Presidents—H. O. Abel, John G. Vogel, Harvey W. Klein, Ernest G. Mills, J. Harvey Sturgeon and J. Edwin Sameth.

COMMITTEE REPORTS
Public Relations and "Pest Control Technology"—George R. Elliott.
Budget and Finance—C. Norman Dold.
Ethics—Lloyd L. Crosby.
Research—J. Edwin Sameth.
Advertising—Henry Turrie.
Bids, Specifications, Agreement Forms—John K. Medoff.
Rodent Control—Martin T. Meyer.
Standards—George L. Hockenyos.
Technical—C. A. Vincent-Daviss.
Grievance—H. K. Steckel.
Fumigation—Bartlett W. Eldredge.
PCO Conferences—Morton S. Prescott.
Termites—J. Wilfred Gunn and J. L. Howell.
Recent Developments in Insecticides of Interest to the Pest Control Operators—E. F. Knipling.
Business Session.
Appointment of Committees.
Introduction of Special or General matters requiring action during Convention sessions.
Announcements.

12:15 P.M.—Luncheon—Blue Room.
Public Health Officers and the PCO—Guest Speaker—Dr. John M. Whitney.

MONDAY AFTERNOON—OCT. 28

2:00 P.M.—Rodent Control Symposium—Martin T. Meyer, Presiding.
(1)—With emphasis on Control of Rats and Ratborne Diseases, personnel from the United States Public Health Service will present three papers.
(a) The Murine Typhus Fever Problem in the United States—Senior Scientist Justin M. Andrews.
(b) The Program of Murine Typhus Fever Control—S. A. Sanitary Engineer John Wiley.
(c) Public Health Service Policy on Rodent Control as a Typhus Fever Suppressive Measure — Assistant Surgeon General C. L. Williams.
(2)—The PCO and Rat Control.
(a) Observations Based on Programs Conducted in South and Southwest—H. O. Abel and L. S. Bridges.
(b) Chicago Rodent Problem—Harold E. Jennings.
(c)—NPCA Policies on Rodent Control—William O. Buettner.
(3)—Techniques and Rodenticides—Justus C. Ward.
(a) "1080"—Formulations, Baiting Stations, Precautions.
(b) ANTU, Castrix.
(c) Rat Proofing.
(4)—Antidotes—with emphasis on new chemicals — Dr. James C. Munch.

5:30 P.M.—Board of Directors Meeting.

MONDAY EVENING—OCT. 28

8:00 P.M.—Postwar Insect Problems. New Fields and College Course—Followed by Open Forum—Prof. J. J. Davis.

10:30 P.M.—Famous Reunion—Accordionist—Miss Zonia Dill; Pianist—Frank A. Cuny.

TUESDAY MORNING—OCT. 29

9:00 A.M.—Wood Destroying Organisms—George L. Hockenyos, presiding.
(1)—Carpenter Ants—W. E. McCauley.
(2)—The 1-2-3-3½ Principles of Subterranean Termite Control.
(a) In the Midwest — Maurice Bailie.
(b) On the West Coast—J. Wilfred Gunn and Wayne K. Davis.
(c) In the East—F. Kenneth Harder and Herbert Meyer.
(d) In the South—Bernard Kolkana and J. L. Howell.
(3)—Soil Poisons—Charles Denny.
(4)—Dry Wood Termites—J. Wilfred Gunn.

12:15 P.M. — Luncheon — University Room.
Guest Speaker—Dr. Clay C. Lyle.

TUESDAY AFTERNOON—OCT. 29

2:00 P.M.—Industry Problems—William O. Buettner, presiding.
(This session is primarily an open forum with personnel assigned to bring attention to the brief summaries or introduction on different subjects and problems)—to cite a few:
(a) Legislation—Dr. John T. Creighton, Theodore Oser.
(b) Insurance—David Weisburger, John G. Vogel.
(c) Safety Program — J. Edwin Sameth.
(d) Advertising—Henry Turrie.
(e) Equipment—Including demonstration—Robert Couhig.
(f) Office Forms—Jacques J. Hess, V. H. Montgomery.
(g) Travel and Transportation—F. E. Bohman.

(*Turn to Page* 189)

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TRADE NEWS . . .

New Insect Repellent

Protective Coatings, Inc., Box 3985, Detroit 27, Mich., had added to its "Lynx" line of sporting accessories liquid insect repellent, "Skeeter-Skatter." A 2-oz. bottle, retailing for $1 is being offered through hardware and sporting goods stores.

Nelson New Hubman V-P

The election of E. I. Nelson as vice-presidnt in charge of public relations, sales, and purchasing, has been announced by the Hubman Supply Company, Columbus, Ohio. Mr. Nelson became affiliated with the Hubman Company during the past year For eleven years prior to the war he was general manager of the Weirton Printing and Publishing Company, Weirton, W. Va. During the war he served on General Bradley's staff during the European campaign and was awarded the Bronze Star Medal. He was released from active duty as a Colonel in December 1945.

Chemists Die in Plane Crash

Among those who lost their lives in the crash of an American Overseas Airline flagship in Newfoundland on October 3rd were Dr. Joseph H. Percy, research and development division of Colgate-Palmolive-Peet Co., Jersey City; Dr. Rudolph Max Goepp, Jr., director of organic research, Atlas Powder Co.; and Dr. Ludwig Valik, chemist of the Morganville, N. J. laboratory of the S. B. Penick Co. The three were going to Germany to study German-developed emulsifiers, detergents, and other synthetic organic chemicals as members of the Office of Technical Services.

Morrison Heads S-V Dept.

Socony-Vacuum Oil Co., New York, has announced the formation of a new department, Household Specialties Sales Department, which will be responsible for marketing the full line of specialties manufactured by that company, including cleaners, floor waxes, polishes, candles, insecticides and building maintenance products.

Alan W. Morrison, associated with the company since 1925, has been appointed manager of the new depart-

A. W. MORRISON

ment. Mr. Morrison was transferred from Buffalo, N. Y. specialty sales in 1932 to New York, and since that time has been active in developing and marketing their line of automotive and household specialties. His full time hereafter will be given to the household line. He is also a vice-president of the National Association of Insecticide & Disinfectant Manufacturers.

Powell Advances Hoyer

David G. Hoyer has been named a vice-president of the John Powell Export Corporation it was announced this month by John Powell & Co., Inc., New York, manufacturers of basic materials for the insecticide industry. Mr. Hoyer, who has been assistant to the export manager since his release from the Navy a year ago, was purchasing agent for the Powell company before the war.

John Oppenheimer Arrives

John Robert Oppenheimer arrived in New York on October 1 at the Leroy Sanitarium, the son of Mr. and Mrs. Leonard Oppenheimer. Mr. Oppenheimer is secretary of the West Disinfecting Co., Long Island City. The new son of the Oppenheimer's is their third child and weighed 7 lb. 11 ounces. The 7-11 combination augurs well for the boy's future, according to Mr. Oppenheimer's colleagues at West. Leonard Oppenheimer is the son of the late Joseph Oppenheimer, who was also secretary of West Disinfecting and widely known in the disinfectant industry.

New Uncle Sam Building

The Uncle Sam Chemical Company, New York, report that they recently acquired a new four-story fireproof building located at 575 West 131st Street, New York. The new plant has approximately 30,000 square feet of space providing greater production facilities for the company. The organization was established as a partnership in 1920 by Howard and Lee Kornicker and was incorporated in 1930. They manufacture a complete line of polishes, waxes, insecticides, deodorants, disinfectants, moth preventatives, soaps, cleansers and other sanitary products.

New plant of Uncle Sam Chemical Co. at 575 West 131st St., New York.

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Powell Expansion Program

The insecticide industry is currently expanding at a rapid rate and the insecticides of today are only the forerunners of the amazing new products of tomorrow—this was the keynote on which W. J. Haude, sales manager of John Powell & Co., Inc., New York, opened the annual sales meeting of the company at the Hotel Vanderbilt, September 18 and 19. Highlight of the meeting, was the announcement of an ambitious expansion program now being undertaken by the company calling for increased plant facilities, increased laboratory facilities and more personnel.

Major emphasis was placed upon new products to be introduced by the Powell company and where these new products will fit into the insect control picture. Among the new products shortly to be announced by Powell is benzene hexachloride, "BHC," a new insecticide for the control of cotton insects, grasshoppers, locusts, aphids, etc. The Powell insecticide laboratories, it was pointed out, are working on many new uses for this product and are currently offering samples for experimental purposes. Also on the Powell new product list is 2,4-D (2,4-dichlorophenoxyacetic acid) which will be offered in four different formulations as a selective weed killer.

Dr. James Munch, discussed the new rodenticide Antu and gave demonstrations of its use on laboratory rats.

During the past year, it was revealed, much work has been done at the Powell laboratories on aerosol formulations. The use of "Sesamin"—a Powell synergist which increases the killing power of the active principles of pyrethrum—was pointed out as a means of producing more efficient and economical insecticides for use in aerosols. "Sesamin" in aerosol formulas containing pyrethrum extract and DDT has been demonstrated to increase rapidity of kill and final kill on roaches.

A group of trade paper editors were guests at the Powell offices, September 20, to see a demonstration, of Antu as well as to inspect the insecticide testing facilities of the Powell laboratories.

Above—Fly breeding chambers in the New York insecticide testing laboratories of John Powell & Co. Dried out fly pupae are being inserted in the breeding chambers, to emerge as flies for test purposes five days later. Below—Closeup of rearing container for Oriental roaches, one of the test insects used.

W. E. Major Firm Organized

W. E. Major, manufacturers' agent and broker, has reported the establishment of the firm, W. E. Major Industries, with headquarters at 1121 South Broadway, Los Angeles, 15 Cal. The company will act as exclusive agents on coal tar chemicals for the Kaiser Co., the Growers Chemical Supply Co., Wilson Carbon Co., Geneva Steel Co., and as non-exclusive agents for Union Oil Co.

O-Cedar Redesign Packages

O-Cedar Corp., Chicago, has retained an industrial designer to redesign its packages for household polishes, waxes and floor-polishing equipment.

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The entomological laboratories of Gulf Oil Corporation at Harmarville, Pa., and Miss Ellen Hill, who runs Peet-Grady tests on flies at the laboratory, are featured in a new movie short by Universal Pictures currently being shown throughout the country. They are also featured in the October issue of PAGEANT MAGAZINE which has done a picture story based on the movie. Two typical stills from the movie are shown above, with Miss Hill collecting knocked down flies with a vacuum gun (left) and computing the kill (right) with a mechanical counter. A. C. Miller is chief entomologist at the Gulf entomological laboratories.

Peterson Joins Penick

S. B. Penick & Co., New York, manufacturers of botanical drugs and medicinal chemicals, have announced the appointment of Nelvin G. Peterson as purchasing agent. Mr. Peterson had been connected for many years with the purchasing staff of the Firestone Tire and Rubber Co., Akron, Ohio. A graduate of Kansas State College, Mr. Peterson entered the armed forces in May 1941 as a 1st Lieutenant in the Army and reached the rank of Lt. Colonel during his period of service. He was assigned to the office of the Chief of Ordnance, Washington, D. C., where he was in charge of procurement activities and accounting during the war.

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Disinfectant Home Use Poll

Household disinfectants are used by 76 per cent of housewives questioned in the *American Home Magazine* reader's panel survey, the magazine recently reported.

Of these 37 per cent said they used one once a week; 29 per cent several times a month; and 25 per cent several times a week; 8 per cent daily; and one 1 per cent listed its use as "only when necessary."

The poll was answered by 1,467 consumers, representing a cross section of the magazine's readers of which 30 per cent were in the $3,000 and under annual income bracket; 33 per cent in the $4,000 and $5,000 yearly income group.

Copies of the survey may be obtained from *American Home Magazine,* New York.

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New Odorless Disinfectant

New on the list of odorless disinfectants is the quaternary ammonium salt compound announced in September by Baird & McGuire, Inc., Holbrook, Mass. The new product called, "No-Roma," is a cationic type solution of alkyl - dimethyl - benzyl - ammonium chloride claimed to be odorless, light amber in color, non-toxic non-inflammable, non-corrosive, non-irritating, and non volatile. The germicide has a phenol coefficient of 25-*E.typhi* and 27 *S.aureus,* but contains no phenol, iodine, mercury, or hypochlorites. A booklet, which can be obtained from the company, gives interesting information regarding the use of "No-Roma", for sanitizing eating and drinking utensils, for barber and beauty shops, for dairy processing, and animal and poultry sanitation. It also contains a useful dilution chart. "No-Roma" is being marketed in 8 ounce, 16 ounce, and one gallon bottles as well as in 5, 15, 30 and 55 gallon drums.

Peru Pyrethrum Price Floor

The Peruvian government has established a floor of about 14.7c a pound for domestically produced pyrethrum in a move to stimulate production of this insecticide material, according to reports reaching the Office of International Trade, U. S. Department of Commerce. The flax commission has been authorized to acquire pyrethrum from small producers at a base price of 2.50 soles per kilogram of flowers. The commission will make the purchases with its own funds and sell the product at the best price available on the market, granting the farmer the difference between the price received and the base price.

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Cautions on 1080

Of considerable interest to pest control as well as to others is a detailed report on safe handling of compound 1080 (sodium fluoroacetate) as a rodent poison which was recently released as appendix No. 1 to the July service letter No. 413 of the National Pest Control Association, Brooklyn, N. Y. The compound, very toxic to man, is not recommended for use by the general public. Information is given regarding its toxicity to many animals as well as a detailed account of its use as a rodenticide. General precautions in using the compound are brought out and first aid and treatment instructions are touched upon for cases of 1080 poisoning in man.

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First Fall P. E. A. Meeting

The first fall classroom meeting of the Professional Exterminators' Association, New York, took place at the Hotel Commodore on September 9th. Dr. John B. Schmitt of Rutgers University addressed the group on stored grain insect pests affecting the household, supplementing his discussion with lantern slides. Each person present received a specimen vial containing ten of the insect pests involved together with an identification chart booklet and a copy of USDA circular No. 720. M. H. Oachs, Ozane Co., presided and Mrs. Ethyl Thorpe of the Tops Exterminating Co. was elected secretary.

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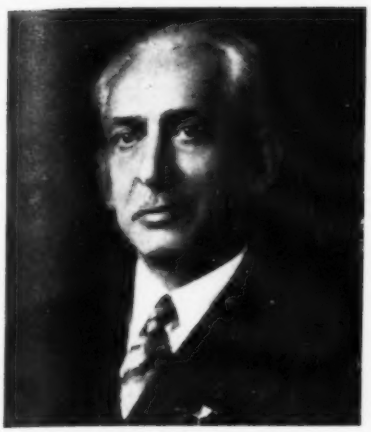

THE LATE SIMON SELIG

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Selig Co. Fiftieth Year

This year marks the golden anniversary of The Selig Company, Atlanta, founded in 1896 by the late Simon S. Selig, Sr., in conjunction with his father, the late Sigmund Selig. Simon S. Selig, Sr. served as president of the company for forty-seven years until his death on May 10, 1943. Albert S. Selig, who started with the company in 1915, succeeded him as president. Previously he had been vice-president and sales manager, working in close collaboration with his brother in the management of the business.

Originally beginning with disinfectants and sanitary supplies, The Selig "Diamond" trade-mark is now found on floor finishes and floor cleaners, waxes and polishes, insecticides, especially those compounded for the floor milling industry and food production plants, as well as moth-control and mothproofing insecticides for fabrics.

The Selig Company specializes in cleaners for the aircraft industry: and has developed engine-cleaning compounds and carbon-removing compounds for aircraft engine overhaul, together with special shipwashing compounds.

Its secretary-treasurer, Julius Simon, has been associated with the company almost from its beginning and he is still active. Since the war ended, Simon S. Selig, Jr. first vice-president, is in charge of sales. At the time of his discharge from the army, he held the rank of Lieutenant Colonel in the infantry. Lyons B. Joel II, second vice-president, entered the organization in October 1931, and is in charge of production and manufacturing. The laboratory and research staff is under the supervision of Julius C. Vallebuona, chief chemist.

Several of its more than sixty salesmen have been with Selig for over thirty-five years, including the following directors: Charles Pearl, district manager in the North Carolina section; Lee L. Strasburger, district manager of the Georgia division; Harry Rosenthal, in the West Virginia, Pennsylvania and Ohio territories, and Samuel Mohr, who is supervisor of the aircraft and automotive cleaner division.

In the company's several branches, Henry Siegal is in charge of The Selig Company of Texas, founded in 1912 with office and warehouse in Dallas, where Jules Hoffman is sales manager. Richard Frye is in charge of the New Orleans branch. The department of sales and advertising is under the direction of John E. Nelson, and E. Clifford Lowry acts as comptroller.

Offerman Honored

M. Offerman, who has been an employee of the Twin City Shellac Co., Inc., Brooklyn, for the past twenty years, was tendered a testimonial dinner, September 12th, at which time he was presented with a gold wrist watch. Twin City Shellac Company are makers of "Dan-Dee" floor polish, floor wax, and "Welsite."

Kenya Delegation to Visit

Headed by the Commissioner for East Africa in London, R. E. Norton, a delegation from the Pyrethrum Board of Kenya will shortly visit the United States for discussions with American processors and importers. The delegation will also include the chairman of the Pyrethrum Board of Kenya, W. F. B. McLellan, the assistant manager of the Kenya Farmers' Association, R. H. O. Lopdell, and two scientists, Drs. Furlong and Coomber. During their stay the group will be located at the offices of the Greene Trading Company, Inc., New York.

New Deodorant

A deodorizer and germicide, "Ke-Cide," an odorless disinfectant, was recently announced by Kelite Products of Los Angeles. The product is a water-soluble powder with a phenol coefficient of 4.4 in the recommended concentration, at which it is noncorrosive, nontoxic, and nonirritating. The product is odorless.

Kolker Adds DDT

Kolker Chemical Works has announced that the company is now manufacturing DDT. The company's line also includes 2,4-D, new selective weed killer. The Kolker plant is located at 80 Lister Avenue, Newark 5, N. J.

Koppers Advances Forker

J. N. Forker, vice-president of the Koppers Company, Pittsburgh, was recently made general manager of the new tar products division and Dan M. Rugg, also a vice-president of the company, was made general manager of the new chemical division. J. C. Macon, Jr. was appointed general sales manager of the tar sales department, in which position he will have charge of sales of tar products and coated products of the Koppers Company, Inc. T. C. Keeling was appointed sales manager of the new chemical division.

New Cleaner "Seabrite"

Hudgins & Ratsey, 295 Fifth Ave., New York, have placed on the market a new metal cleaner, "Seabrite," which, it is claimed, is adapted to practically all metals.

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Reports on Tests of New Insecticides

IN speaking to the 13th annual meeting of the Agricultural Insecticide and Fungicide Association last month at Spring Lake, N. J., Dr. F. C. Bishopp of the Bureau of Entomology and Plant Quarantine, USDA reported on preliminary results of tests on newer insecticides. Although his remarks centered largely around the agricultural application of pest control materials, a good portion of his talk was of interest also to manufacturers of household insecticides.

Discussing research on benzene hexachloride, Dr. Bishopp explained that tests against a variety of pests have demonstrated the toxicity of this material to some insects which are resistant to DDT and other materials. He pointed out that the lack of available methods and apparatus for determining the percentages of several isomers, and difficulty in isolating them in pure form have slowed research with benzene hexachloride. "For practical purposes, the gamma isomer is the only insecticidally active constituent of benzene hexachloride," he said and and added that one of the objections to the material for household use is its persistent musty odor, which although partially overcome, needs further reduction before benzene hexachloride can be widely used.

Much remains to be done in standardizing commercial benzene hexachloride as being about 18 times as toxic as DDT, and about twice as toxic as standard pyrethrins when applied by the turntable method. Gamma-benzene hexachloride used against housefly larvae at a concentration of 8 parts per million killed 50 per cent of the larvae as compared to 77 p.p.m. for DDT and 928 p.p.m. for borax.

As a residual spray for control of houseflies and mosquitos, benzene hexachloride is less persistent than DDT, and gives a less rapid knock-down of the housefly. It is also less toxic than DDT against larvae of the malaria mosquito, although benzene hexachloride produces a more rapid knock-down of the yellow fever mosquito than does DDT. The benzene material kills body lice even in low dilution, and has exhibited some ovicidal action.

Describing the action of "3956," a chlorinated bicyclic terpene, Dr. Bishopp likened it to DDT in that while each exhibits a slow knock-down and kill, both have a persistent spray residue. However, when used as a contact spray or in aerosols, and as a spray residue, "3956" appears to be less toxic than DDT to houseflies. It also acts more slowly than DDT when used as a residual spray against yellow-fever mosquito, and is slightly less toxic than DDT as a contact spray. Against body lice, "3956" has been outstanding, being more toxic and more persistent than DDT. Many household pests, including cockroaches, bedbugs and carpet beetles are susceptible to this material, although further work in this field is required to evaluate it fully.

Another numerically-designated insecticide, "1068," a chlorinated hydrocarbon, is heralded as being more toxic than DDT to a number of pests, including the housefly and the American cockroach. U. S. Department of Agriculture laboratories at Orlando, Fla., report the toxicity of "1068" as practically identical with that of DDT to larvae of the malaria mosquito, and outstanding against the body louse. Applied as a powder, "1068" was found to be more toxic to the German cockroach than was DDT.

Regarding DDT, Dr. Bishopp stated that it must still be considered a new insecticide. Many of the promising results obtained in early small-scale tests have been realized in practical field use, although some of the hopes of the over-optimistic were dashed in that DDT failed to become the answer to all insect problems. The principle deterrent to more extensive use of DDT lies in the fear of residues which may be harmful to man.

The methoxy analog of DDT was found to be ineffective against body lice and much less toxic than DDT to malaria mosquitos and to houseflies. The para-para prime fluorine analog of DDT, on the other hand, has shown considerable toxicity to body lice, mosquitos, flies and cockroaches, but much less than has DDT. The relatively high cost of manufacture is a factor against the material, Dr. Bishopp indicated.

A considerable amount of attention has been directed to synergists, or activators, particularly to supplement or extend pyrethrum. Substituted piperonyl cyclohexenones have received attention recently, and some tests indicate that some of the piperonyl compounds have insecticidal value aside from their synergistic effect on the pyrethrins.

In closing, Dr. Bishopp re-emphasized the fact that the results reported are of preliminary nature, and that many of the tests being conducted this season are not yet complete. He also reminded that his review made no attempt to enumerate all the new and promising insecticides, nor to list all the pests against which such are directed.

—— ♦ ——

DDT Pellets for Mosquitoes

The United States Public Health Service reports development of a new technique for use of DDT against mosquitoes. DDT "pellets" attached to wires are lowered into pools where mosquitoes breed, to act against the insect in the larval stage. Writing in current public health bulletins, Senior Sanitary Engineer H. A. Johnson and Chemist J. C. Eason said the device is a joint venture of malaria investigators conducted at Memphis, Tenn., and Atlanta, Ga.

—— ♦ ——

New Polishes and Cleaners

Speco, Inc., 3142 Superior Ave., Cleveland, O., has announced a new line of automotive and household polishes and cleaners to be marketed through hardware dealers. Included are an auto polish, upholstery cleaner, glass cleaner and polish, metal polish, tar remover, auto-wash, hand soap, rust remover and inhibitor and a furniture polish.

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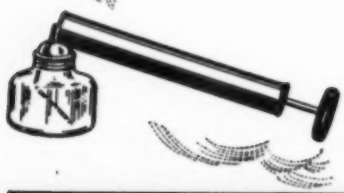

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LOW TEMPERATURE COAL TAR

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Producers and Refiners of Coal Tar and Its Products

TRADE MARK APPLICATIONS

(*From Page* 63)

other for furniture polish and floor wax. Filed Feb. 16, 1946 by Grand Union Co., New York. Claims use since 1895 on furniture polish and since 1935 on floor wax.

Trade Marks Granted

422,810. Soap bubble kits. Filed by Chemical Sundries Co., Chicago, Dec. 10, 1945. Serial No. 492,987. Published May 21, 1946. Class 22.

422,988. Shampoos. Filed by Associated Products Inc., Chicago, Oct. 4, 1945. Serial No. 489,379. Published May 14, 1946. Class 6.

422,989. Shampoos. Filed by Associated Products, Inc., Chicago, Oct. 4, 1945. Serial No. 489,381. Published May 14, 1946. Class 6.

422,993. Chemical preparations for removing carbon from tanks, tubes and boilers. Filed by New Process Service Co., San Francisco, Oct. 8, 1945. Serial No. 489,601. Published Apr. 2, 1946. Class 6.

422,994. Chemical preparations for flushing and flashing scale from tubes. Filed by New Process Service Co., San Francisco, Oct. 8, 1945. Serial No. 489,602. Published May 7, 1946. Class 6.

423,021. Insecticides. Filed by Laboratory Products Corp., New York, Nov. 9, 1945. Serial No. 491,344. Published May 14, 1946. Class 6.

423,024. Insecticides and disinfectants. Filed by Rohm and Haas Co., Philadelphia, Nov. 13, 1945. Serial No. 491,514. Published May 14, 1946. Class 6.

423,038. Shampoos. Filed by Associated Products, Inc., Chicago, Dec. 3, 1945. Serial No. 492,538. Published May 14, 1946. Class 4.

423,039. Soap. Filed by Carl A. Futter, Chicago, Dec. 3, 1945. Serial No. 492,555. Published May 27, 1946. Class 4.

423,043. Insecticides. Filed by Tuff Stuff Insecticides, Miami, Fla., Dec. 5, 1945. Serial No. 492,709. Published May 14, 1946. Class 6.

423,044. Shampoos. Filed by Associated Products, Inc., Chicago, Dec. 6, 1945. Serial No. 492,759. Published May 7, 1946. Class 6.

423,235. Soaps. Filed by Richard Hudnut, New York, Aug. 31, 1945. Serial No. 487,839. Published June 4, 1946. Class 4.

423,237. Cleaning solution for dentures and bridge work. Filed by Ralph L. Lenhart, New York, Sept. 13, 1945. Serial No. 488,410. Published June 4, 1946. Class 4.

423,238. Shampoo. Filed by Cyeton Products, Los Angeles, Sept. 15, 1945. Serial No. 488,515. Published May 21, 1946. Class 6.

423,239. Tooth powder. Filed by Elizabeth Villarreal, Chicago, Sept. 17, 1945. Serial No. 488,629. Published May 21, 1946. Class 6.

423,244. Medicated shaving cream. Filed by Novelera Products Co., Chicago, Oct. 3, 1945. Serial No. 489,344. Published May 28, 1946. Class 4.

423,249. Soaps and cleansing compounds for general use. Filed by Harold M. Redman, Pontiac, Mich., Oct. 15, 1945. Serial No. 489,987. Published June 4, 1946. Class 4.

423,250. Wax cleaner and polish for floors, woodwork and furniture. Filed by Twin City Shellac Co., Brooklyn, Oct. 18, 1945. Serial No. 490,152. Published May 28, 1946. Class 16.

423,251. Lens cleaning fluid. Filed by Wollensak Optical Co., Rochester, N. Y., Oct. 19, 1945. Serial No. 490,221. Published May 21, 1946. Class 4.

423,256. Shoe polish and shoe dressing. Filed by Anchor Shoe Polish Mfg. Co., Chicago, Oct. 30, 1945. Serial No. 490,773. Published May 28, 1946. Class 4.

423,258. Shaving cream, facial and bath soaps. Filed by John Frederics, Inc., New York, Oct. 31, 1945. Serial No. 490,806. Published May 14, 1945. Class 4.

423,264. Insecticides and fungicides. Filed by California Spray-Chemical Corp., Richmond, Calif., Nov. 6, 1945. Serial No. 491,151. Published May 21, 1946. Class 6.

423,268. Dry cleaner, rug shampoo cleaners, window cleaners, metal polishes and cleaners, venetian blind cleaners and shaving cream. Filed by Durite Corp., Detroit, Nov. 8, 1945. Serial No. 491,247. Published June 4, 1946. Class 4.

423,269. Synthetic detergent for general cleaning purposes. Filed by CEB Manufacturing Co., Elizabeth, N. J., Nov. 8, 1945. Serial No. 491,250. Published June 4, 1946. Class 4.

423,273. Wall, tile and glass cleaner. Filed by Strand Reneau Co., Lynwood, Calif., Nov. 10, 1945. Serial No. 491,436. Published May 28, 1946. Class 4.

423,274. Liquid solvent and cleaner for removing tar, wax, oil and grease from metal, fabric and other surfaces. Filed by General Solvents Sales Co., Rochester, N. Y., Nov. 13, 1945. Serial No. 491,473. Published June 4, 1946. Class 4.

423,276. Shampoo. Filed by Kinghill Laboratories, New York, Nov. 16, 1945. Serial No. 491,718. Published May 21, 1946. Class 6.

423,282. Bubble bath preparation. Filed by Julius V. Madsen Co., Los Angeles, Nov. 19, 1945. Serial No. 491,868. Published May 28, 1946. Class 6.

NPCA CONVENTION

(*From Page* 165)

(h) Charges for Jobs—
(i) Application Procedures—Albert M. Akers.
(j) Bookkeeping Methods—
(k) "On-the-Job" Training Program and Employee Training—Herman L. Fellton.
(l) Service To Our Clients—

5:00 P.M.—Board of Directors Meeting.

TUESDAY EVENING—OCT. 29

Report to Grand Ball Room 7:45 P.M.
Sightseeing Trip—8:00 P.M. to Midnight.
New Orleans Gay Night Life—The Paris of America.

WEDNESDAY MORNING—OCT. 30

9:00 A.M.—Business Session—Theodore Oser, presiding.
(a) Unfinished Business.
(b) New Business.
(c) Report of Nominating Committee.
(d) Election of Officers and Directors.
(e) Convention City for 1947.

12:15 P.M. — No Scheduled Group Luncheon.

WEDNESDAY AFTERNOON—OCT. 30

2:00 P.M.—Fumigation—Bartlett W. Eldredge, presiding.
Unusual Accidents.
Discussion on the Use of the Combination of Two or More Fumigants—George H. Chapman.

4:00 P. M.—The Round-Up—or Pulling the Loose Ends Together.

WEDNESDAY EVENING—OCT. 30

7:30 P.M.—Annual Banquet (Dress Optional—Men, informal). Entertainment and Dancing—Johnny De Droit's Orchestra.

Faster, More Effective Spraying

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MISTMASTER INSECTICIDE SPRAYER

MOTORIZED spraying of insecticides is not only faster, covering a wider area in less time, but also more effective. Mistmaster Insecticide Sprayer is motorized to give more penetrating, more efficient spraying of insecticides, disinfectants, etc. Unit holds up to 1 gallon of liquid and sprays it 18' to 20'. Shoots with such force as to penetrate all cracks and crevices. Extensively used.

We do not sell insecticides. Our business is the manufacture of Sprayers. (Patented in U. S. A. and foreign countries.)

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1812 W. Winona Avenue Chicago 40, Ill.

Licensed to build and distribute Breuer Insecticide Sprayers.

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SAFETY POWDERED HAND SOAP
COMBATS DERMATITIS

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

". . . don't look now, Cuthbert, but ah thinks you am being followed!"

. . . obvious?

HOW numerous are the people who overlook the obvious! Especially in advertising! Who try to reach their goal by devious routes instead of straight-to-the-target advertising. For example, as we have noted before, when you want to reach the plumbers, why not advertise in the plumbing papers, — or the butchers, in the butchers' magazines? Why avoid the obvious? And if you might perchance wish to reach direct and without detours the field of soap and detergent products, disinfectants, and allied chemical specialties, the obvious choice is

SOAP *and Sanitary Chemicals*

254 WEST 31st STREET NEW YORK 1

A.B.C. paid subscription renewal rate for year ending October, 1945—88.4%

Tale Ends

THE soap shortage is a plot, gentle reader! Said a representative of a small soap company recently at a Chicago meeting,—the soap shortage has been engineered by the makers of synthetic non-soap detergents so they can steal the soap makers' market. And that, boys, is one for the book!

* * *

Good appointment in Washington! J. L. Brenn, president of the Huntington Laboratories, Huntington, Indiana, a former president of NAIDM, and a public-minded citizen if ever there were one, has been appointed a member of the Advisory Committee on Commercial Standards of the National Bureau of Standards.

* * *

Roaches cost a New York restaurant owner $2 each when he appeared in court last month on a sanitation charge. The complaining inspector said he counted 100 roaches in the kitchen,—and the judge made the fine $200 even money!

* * *

From an advertisement in the daily press recently: "Soda Ash Light, available for export in large quantities." To many American users unable to obtain enough ash for their needs, this announcement is akin to waving a red flag at a bull. That grinding noise you hear is the gnashing of teeth!

* * *

Add to new OPA lingo in Washington "target prices." Just what these are, we have a hunch, not even the OPA boys know, but the phrase sounds tricky. However, they could be the prices which you put up for your competitors to shoot at.

* * *

Rumor has it that some remote renderers are getting rich on account of the ignorance of new meat slaughterers. The latter catering in some cases to the black market not only trim inefficiently, but accept non-edible prices for much of their slaughtering by-products for which they should get higher edible prices. Anybody want to sell a rendering plant?